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(54) Amino-benzofuryl-and thienyl-derivatives

Aminobenzofuryl- und -thienylderivate

Dérivés de aminobenzofuryle et -thienyle

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(73) Proprietor: **BAYER AG**
51368 Leverkusen (DE)

(72) Inventors:
- **Bräunlich, Gabriele, Dr.**
  D-42115 Wuppertal (DE)
- **Fischer, Rüdiger, Dr.**
  D-50933 Köln (DE)
- **Es-Sayed, Mazen, Dr.**
  D-42115 Wuppertal (DE)
- **Hanko, Rudolf, Dr.**
  D-40237 Düsseldorf (DE)
- **Tudhope, Stephen, Dr.**
  Windsor Berkshire SL4 4JH (GB)
- **Sturton, Graham, Dr.**
  Bray Maidenhead SL 62 DW (GB)
- **Abram, Trevor, Dr.**
  Marlow Buckinghamshire (GB)
- **McDonald-Gibson, Wendy J.,Dr.**
  Wallingford, Oxford, OX 106 HD (GB)
- **Fitzgerald, Mary F., Dr.**
  Begbroke Oxford OX 51 RN (GB)

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EP-A- 0 146 243 **EP-A- 0 551 662**
EP-A- 0 623 607

- **CHEMICAL ABSTRACTS, vol. 77, no. 23, 4 December 1972 Columbus, Ohio, US; abstract no. 151884g, A.E. BRANDSTROM ET AL. 'Pharmacologically acitve benzofuran derivatives' page 395; column 2;**
- **CHEMICAL ABSTRACTS, vol. 78, no. 25, 25 June 1973 Columbus, Ohio, US; abstract no. 159427b, A.E. BRANDSTROM ET AL. 'Benzofuran derivatives' page 401; column 1;**

Remarks:
The file contains technical information submitted after the application was filed and not included in this specification

EP 0 685 475 B1

Description

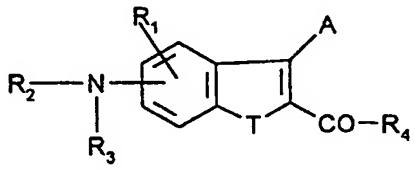
The invention relates to amino-benzofuryl- and thienyl-derivatives, processes for their preparation and their use in medicaments.

It is known that the NADPH oxidase of phagocytes is the physiological source to the superoxide radical anion and reactive oxygen species derived therefrom which are important in the defence against pathogens. Uncontrolled formation leads to tissue damage in inflammatory processes. It is additionally known that elevation of phagocyte cyclic AMP leads to inhibition of oxygen radical production and that this cell function is more sensitive than others such as aggregation or enzyme release (cf. Inb. Arch. Allergy Immunol., vol. 97: pp 194-199, 1992).

Benzofuran- and benzothiophen derivatives having lipoxygenase-inhibiting action are described in the publication EP 146 243.

Surprisingly it was found that compounds given by the general formula (I) inhibited oxygen radical formation and elevated cellular cyclic AMP levels probably by inhibition of phagocyte phosphodiesterase activity.

The invention relates to amino-benzofuryl- and thienyl-derivatives of the general formula (I)



(I)

in which

I. :

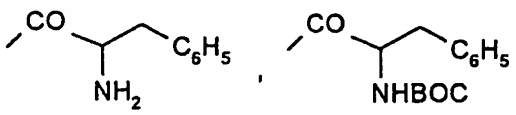
R^1 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms or represents halogen, carboxyl, cyano, nitro, trifluoromethyl or a group of a formula $-OR^5$, $-SR^6$ or $-NR^7R^8$,
in which

R^5, R^6 and R^8 are identical or different and denote hydrogen, cycloalkyl having 3 to 6 carbon atoms, benzyl or a 5 to 7-membered saturated or unsaturated heterocycle having up to 4 heteroatoms from the series comprising N, S and/or O and to which a phenyl ring can be fused and which is optionally substituted by identical or different substituents from the series comprising halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms or
denote straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, or
denote phenyl, which is optionally monosubstituted to disubstituted by identical or different substituents from the series comprising nitro, halogen, carboxy or straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms,
or

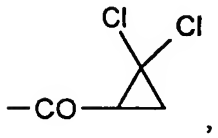
R^5 denotes a hydroxyl protecting group,

R^7 denotes hydrogen or a straight-chain or branched alkyl having up to 4 carbon atoms,

R^2 represents formyl or straight-chain or branched acyl, alkoxy or alkoxycarbonyl each having up to 8 carbon atoms in the alkyl group, or represents benzoyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising halogen, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms in the alkyl group,
or represents a group of a formula



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ or a residue of the formula



in which

R^9 denotes straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by phenyl, or denotes phenyl, which is optionally substituted by trifluoromethyl, cyano, nitro or straight-chain or branched alkyl having up to 6 carbon atoms,

R^{10} and R^{11} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,

R^{12} denotes straight-chain or branched hydroxyl, oxyacyl, alloxy or alkoxycarbonyl each having up to 6 carbon atoms or carboxy,

a denotes a number 0, 1, 2 or 3,

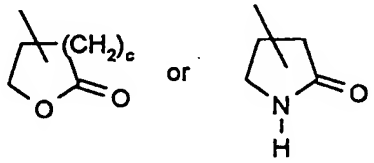
b denotes a number 1, 2 or 3,

R^{13} denotes straight-chain or branched alkyl having up to 6 carbon atoms,

R^3 represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms, or has the abovementioned meaning of R^2,

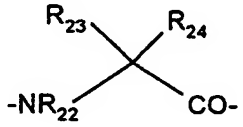
T represents an oxygen or sulfur atom

A represents hydrogen, hydroxyl, cycloalkyl with 3 to 6 carbon atoms, carboxy or straight-chain or branched alkoxycarbonyl or alkoxy each having up to 6 carbon atoms, or straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms and each of which is optionally monosubstituted by cyano or by a 5 to 7-membered saturated or unsaturated heterocycle having up to 4 heteroatoms from the series comprising N, S and O, which is optionally substituted by identical or different substituents from the series comprising hydroxy, halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms,
or alkyl or alkenyl are optionally substituted by a group of a formula



in which

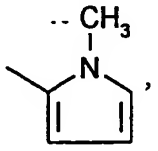
c denotes a number 1 or 2, and in which both rings are optionally monosubstituted by hydroxy, halogen or by straight-chain or branched alkyl having up to 6 carbon atoms,
or alkyl or alkenyl are optionally monosubstituted by a group of a formula -CO-R^{14}, -CO-$NR^{15}R^{16}$, -$CONR^{17}$-SO_2-R^{18} or - $PO(OR^{19}(OR^{20})$, -OR^{21} or



in which

R^{14} denotes hydroxyl, cycloalkyloxy having 3 to 7 carbon atoms or straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms,

R^{15}, R^{16} and R^{17}	are identical or different and represent hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, pheny or benzyl,
	or
R^{15}	denotes hydrogen, and
R^{16}	denotes hydroxyl,
	or
R^{15} and R^{16}	together with the nitrogen atom form a 5-or 6-membered saturated heterocycle,
R^{18}	denotes a straight-chain or branched all having up to 6 carbon atoms, which is optionally substituted by phenyl or trifluoromethyl,
	or
	denotes phenyl, which is optionally substituted by substituents from the series comprising halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms,
R^{19}, R^{20} and R^{21}	are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,
R^{22}	denotes hydrogen, an aminoprotecting group or straight-chain or branched alkyl having up to 6 carbon atoms,
R^{23} and R^{24}	are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms,
	or
R^{23}	has the abovementioned meaning,
	and
R^{24}	denotes cycloalkyl having 3 to 6 carbon atoms or aryl having 6 to 10 carbon atoms or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cyano, methylthio, hydroxy, mercapto, guanidyl or a group of a formula - $NR^{25}R^{26}$ or R^{27}-CO-,
	wherein
R^{25} and R^{26}	have the meaning shown above for R^{15}, R^{16} and R^{17},
R^{27}	denotes hydroxyl, benzyloxycarbonyl, straight-chain or branched alkoxy having up to 6 carbon atoms or the abovementioned group -$NR^{25}R^{26}$, or alkyl is optionally substituted by cycloalkyl having 3 to 6 carbon atoms, or by aryl having up 6 to 10 carbon atoms, which is optionally substituted by hydroxyl, halogen, nitro, straight-chain or branched alkoxy having up to 8 carbon atoms or by the abovementioned group of the formula -$NR^{25}R^{26}$,
	or alkyl is optionally substituted by indolyl or by a 5 to 6 menbered unsaturated heterocycle having up to 4 N-atoms wherein optionally all -NH-functions are protected by straight-chain or branched alkyl having up to 6 carbon atoms or by an amino protecting group,
	and
R^4	represents phenyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, adamantyl, phenoxy, cycloalkyl having up 3 to 6 carbon atoms, halogen, nitro, furanyl, thienyl, pyridyl, tetrazolyl, trifluoromethyl, difluoromethyl, cyano, carboxyl, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 11 carbon atoms in the alkyl group or by phenyl, which is optionally monosubstituted to tribsubstituted by nitro, halogen, formyl, carbonyl or straight chain or branched alkoxy, acyl, alkoxycarbonyl or alkyl each having up to 6 carbon atoms, which is optionally substituted by hydroxyl
	or phenyl is substituted by a group of formula -$NR^{28}R^{29}$, - SR^{30}, SO_2R^{31},
	-O-SO_2R^{32} or



	in which
R^{28} and R^{29}	have the meaning shown above for R^{10} and R^{11},
	or
R^{28}	denotes hydrogen,

and

R^{29} denotes straight-chain or branched acyl having up to 6 carbon atoms,

R^{30} denotes straight-chain or branched alkyl having up to 6 carbon atoms,

R^{31} and R^{32} are identical or different and represent straight-chain or branched alkyl having up to 6 carbon atoms, benzyl or phenyl, which are optionally substituted by trifluoromethyl, halogen or straight-chain or branched all having up to 6 carbon atoms,

with the proviso that A does not denote methyl

or

II. :

if A represents a methyl group

R^1, T and R^4 have the meaning described in part I,

and in this case

R^2 and R^3 are identical or diffent and represent hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms, or represent formyl or straight-chain or branched acyl, alkoxy or alkoxycarbonyl each having up to 8 carbon atoms,
or represent benzoyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising halogen, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms,
or represent a group of a formula $-SO_2(NH)_8R^{33}$, SO_2NH_2, $-CO-(CH_2)_dNR^{34}R^{35}$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ or -CO-X,
in which

R^{33} has the abovementioned meaning of R^9 and is identical or different to the latter,

R^{34} and R^{35} are identical or different and have the abovementioned meaning of R^{10} and R^{11},

R^{36} denotes hydroxyl or straight-chain or branched alkoxy having up to 6 carbon atoms,

R^{37} has the abovementioned meaning of R^{12} or denotes straight-chain or branched alkoxy or oxyacyl each having up to 6 carbon atoms or hydroxyl,

d has the abovementioned meaning of a,

e denotes a number 1, 2, 3, 4 or 5,

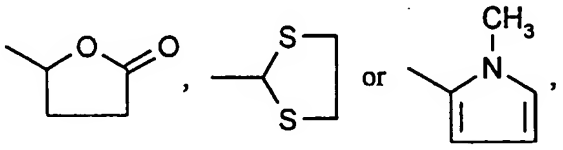
f has the abovementioned meaning of b,

g denotes a number 0 or 1,

X denotes a 5-membered saturated or unsaturated heterocycle having up to 3 heteroatoms from the serie comprising N, S and/or O, which is optionally monosubstituted to trisubstituted by nitro, methyl or ethyl,

or

X denotes a residue of the formula



or

III. :

R^1, A and T have the meaning described in part I

or

A represents methyl,
R^2 and R^3 have the meaning described in part II,

and in this case

R^4 represents a 5 to 7 membered, saturated or unsaturated heterocycle, which can contain up to three oxygen, suphur and/or nitrogen atoms as heteroatoms and to which further a benzene ring can be fused and wherein both rings are optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, halogen, nitro, 1H-tetrazolyl, trifluoromethyl, trifluoromethoxy, difluoromethyl, difluoromethoxy, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 8 carbon atoms or by a group of formula $-NR^{38}R^{39}$, $-SR^{40}$, SO_2R^{41} or $-O-SO_2R^{42}$,
in which
R^{38} and R^{39} have the meaning shown above for R^{28} and R^{29} and are identical to the latter or different from the latter,
R^{40} has the abovementioned meaning of R^{30},
R^{41} and R^{42} are identical or different and have the abovementioned meaning of R^{31} and R^{32},

and salts thereof.

The amino-benzofuryl- and thienyl-derivatives according to the invention can also be present in the form of their salts. In general, salts with organic or inorganic bases or acids may be mentioned here.

Physiologically acceptable salts are preferred in the context of the present invention. Physiologically acceptable salts of the amino-benzofuryl- and thienyl-derivatives can be metal or ammonium salts of the substances according to the invention, which contain a free carboxylic group. Those which are particularly preferred are, for example, sodium, potassium, magnesium or calcium salts, and also ammonium salts which are derived from ammonia, or organic amines, such as, for example, ethylamine, di- or triethylamine, di- or triethanolamine, dicyclohexylamine, dimethylaminoethanol, arginine, lysine or ethylenediamine.

Physiologically acceptable salts can also be salts of the compounds according to the invention with inorganic or organic acids. Preferred salts here are those with inorganic acids such as, for example, hydrochloric acid, hydrobromic acid, phosphoric acid or sulphuric acid, or salts with organic carboxylic or sulphonic acids such as, for example, acetic acid, maleic acid, fumaric acid, malic acid, citric acid, tartaric acid, ethanesulphonic acid, benzenesulphonic acid, toluenesulphonic acid or naphthalenedisulphonic acid.

The compounds according to the invention can exist in stereoisomeric forms which either behave as image and mirror image (enantiomers), or which do not behave as image and mirror image (diastereomers). The invention relates both to the antipodes and to the racemate forms, as well as the diastereomer mixtures. The racemate forms, like the diastereomers, can be separated into the stereoisomerically uniform constituents in a known manner.

Hydroxyl protective group in the context of the above-mentioned definition in general represents a protective group from the series comprising: trimethylsilyl, tert.butyl-dimethylsilyl, benzyl, 4-nitrobenzyl, 4-methoxybenzyl, acetyl, tetrahydropyranyl and benzoyl.

Heterocycle in general represents a 5- to 7-membered, preferably 5- to 6-membered, saturated or unsaturated ring which can contain up to four oxygen, sulphur and/or nitrogen atoms as heteroatoms and to which further benzene ring can be fused.

The following are mentioned as preferred: thienyl, furyl, pyrrolyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, quinolyl, isoquinolyl, quinazolyl, quinoxazolyl, cinnolyl, thiazolyl benzothiaazolyl, isothiazolyl, benzisothiazolyl, oxazolyl, benzoxazolyl, isoxazolyl, imidazolyl, benzimidazolyl, indolyl, morpholinyl, pyrrolidinyl, piperidyl or piperazinyl.

Preferred compounds of the general formula (I) are those
in which

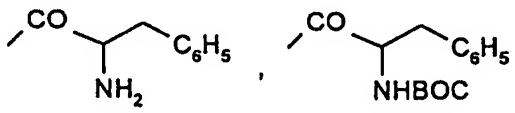
I. :

R^1 represents hydrogen, straight-chain or branched alkyl having up to 4 carbon atoms or represents fluorine, chlorine, bromine, nitro, trifluoromethyl or a group of a formula $-OR^5$, $-SR^6$ or $-NR^7R^8$,
in which
R^7 denotes hydrogen or a straight-chain or branched alkyl having up to 3 carbon atoms,
R^5, R^6 and R^8 are identical or different and denote hydrogen, cyclopropyl, cyclopentyl, cyclohexyl, chinolyl, pyri-

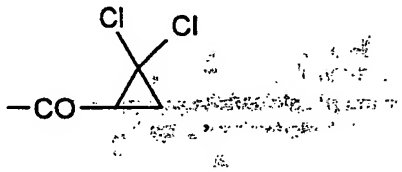
dyl, imidazolyl, 1,3-thiazolyl or thienyl, which are optionally substituted by identical or different substituents from the series comprising fluorine, chlorine, bromine, iodine, cyano, nitro or by a straight-chain or branched alkyl having up to 5 carbon atoms, or
denote straight-chain or branched alkyl or alkenyl each having up to 6 carbon atoms, or
denote phenyl, which is optionally monosubstituted to disubstituted by identical or different substituents from the series comprising nitro, fluorine, chlorine, bromine, iodine, carboxy or straight-chain or branched alkoxycarbonyl having up to 5 carbon atoms,
or

R^5 denotes benzyl, acetyl or tetrahydropyranyl,

R^2 represents formyl or straight-chain or branched acyl, alkoxy or alkoxycarbonyl each having up to 6 carbon atoms in the alkyl group,
or represents benzoyl, which is optionally monosubstituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 4 carbon atoms in the alkyl group,
or represents a group of a formula



$-SO_2R^9$, $-CO-(CH_2)_a-NR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ or a residue of the formula



in which

R^9 denotes straight-chain or branched alkyl having up to 4 carbon atoms, which is optionally substituted by phenyl, or denotes phenyl, which is optionally substituted by trifluoromethyl, cyano, nitro or straight-chain or branched alkyl having up to 4 carbon atoms,

R^{10} and R^{11} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 4 carbon atoms or phenyl,

R^{12} denotes straight-chain or branched alkoxycarbonyl having up to 4 carbon atoms or carboxy,

a denotes a number 0, 1, 2 or 3,

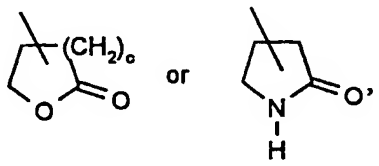
b denotes a number 1, 2 or 3,

R^{13} denotes straight-chain or branched alkyl having up to 4 carbon atoms,

R^3 represents hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms, or has the abovementioned meaning of R^2,

T represents an oxygen atom

A represents hydrogen, hydroxyl, cyclopropyl, cyclobutyl, cyclopentyl, carboxyl or straight-chain or a branched alkoxycarbonyl or alkoxy each having up to 4 carbon atoms, or straight-chain or branched alkyl or alkenyl each having up to 6 carbon atoms and each of which is optionally monosubstituted by cyano, tetrazolyl, oxazolyl, oxazolinyl, thiazolyl or a group of a formula



in which

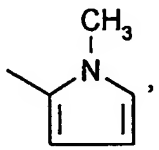
c	denotes a number 1 or 2

and in which all rings are optionally monosubstituted by hydroxy, fluorine, bromine, chlorine or by straight-chain or branched alkyl having up to 4 carbon atoms,

or alkyl or alkenyl are optionally monosubstituted by a group of a formula -CO-R^{14}, -CO-$NR^{15}R^{16}$ or -OR^{21},

in which

R^{14}	denotes hydroxyl, cyclopropyloxy, cyclopentyloxy, cyclohexyloxy or straight-chain or branched alkyl or alkoxy each having up to 6 carbon atoms,
R^{15} and R^{16}	are identical or different and represent hydrogen, straight-chain or branched alkyl having up to 4 carbon atoms, phenyl or benzyl,
	or
R^{15}	denotes hydrogen,
	and
R^{16}	denotes hydroxyl,
	or
R^{15} and R^{16}	together with the nitrogen atom form a pyrrolidinyl, morpholinyl or a piperidinyl ring,
R^{21}	represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,
	and
R^4	represents phenyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, adamantyl, phenoxy, cyclopropyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine, iodine, nitro, tetrazolyl, furanyl, thienyl, pyridyl, trifluoromethyl, difluoromethyl, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 10 carbon atoms in the alkyl group, or
	by phenyl, which is optionally monosubstituted to tribsubstituted by fluorine, chlorine, bromine, nitro, formyl or straight-chain or branched alkoxy, acyl, ethoxycarbonyl or alkyl each having up to 4 carbon atoms, which is optionally substituted by hydroxyl, or
	phenyl is substituted by a group of formula - $NR^{28}R^{29}$, -SR^{30}, -SO_2R^{31}, -O-SO_2R^{32} or



in which

R^{28} and R^{29}	have the meaning shown above for R^{10} and R^{11},
	or
R^{28}	denotes hydrogen, and
R^{29}	denotes straight-chain or branched acyl having up to 6 carbon atoms,
R^{30}	denotes straight-chain or branched alkyl having up to 4 carbon atoms,
R^{31} and R^{32}	are identical or different and represent straight-chain or branched alkyl having up to 5 carbon atoms or phenyl, which is optionally substituted by trifluoromethyl, fluorine, chlorine, bromine or straight-chain or branched alkyl having up to 3 carbon atoms,

with the proviso that A does not denote methyl,

or

II.:

if A represents a methyl group

R^1, T and R^4	have the meaning described in part I,

and in this case

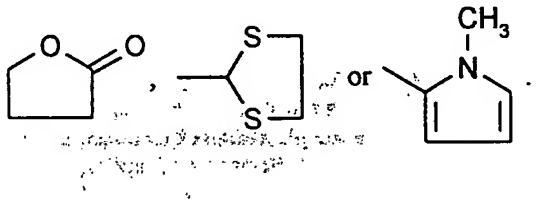
R^2 and R^3	are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 4

carbon atoms, or
represent formyl or straight-chain or branched acyl, or alkoxycarbonyl each having up to 4 carbon atoms,
or represent benzoyl, which is optionally substituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 4 carbon atoms,
or represent a group of a formula $-SO_2-(NH)_g-R^{33}$, SO_2NH_2, $-CO-(CH_2)_d-NR^{34}R^{35}$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ or CO-X,
in which

R^{33}	has the abovementioned meaning of R^9 and is identical or different to the latter,
R^{34} and R^{35}	are identical or different and denote hydrogen or methyl,
R^{36}	denotes hydroxyl or straight-chain or branched alkoxy having up to 4 carbon atoms or carboxy,
R^{37}	has the abovementioned meaning of R^{12} or denotes hydroxyl or straight-chain or branched alkoxy or oxacyl each having up to 4 carbon atoms,
d	has the abovementioned meaning of a,
e	denotes a number 1, 2, 3 or 4,
f	has the abovementioned meaning of c,
g	denotes a number 0 or 1,
X	denotes pyrrolyl, furyl or isoxazolyl, which are optionally monosubstituted to trisubstituted by nitro, methyl or ethyl

or

X	denotes a residue of the formula



or

III.:

R^1, A and T	have the meaning described in part I,

or

A	represents methyl,
R^2 and R^3	have the abovementioned meaning described in part II

and in this case

R^4	represents pyridyl, imidazolyl, pyrazolyl, thienyl, isothiazolyl, 1,3-thiazolyl or benzo[b]thiophenyl, where all rings are optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, fluorine, chlorine, bromine, iodine, nitro, 1H-tetrazolyl, trifluoromethyl, trifluoromethoxy, difluoromethyl, difluoromethoxy, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms or by a group of formula $-NR^{38}R^{39}$, $-SR^{40}$, $-SO_2R^{41}$ or $-O-SO_2R^{42}$,

in which

R^{38} and R^{39}	have the meaning shown above for R^{28} and R^{29} and are identical to the latter or different from the latter,
R^{40}	has the abovementioned meaning of R^{30},
R^{41} and R^{42}	are identical or different and have the abovementioned meaning of R^{31} and R^{32},

and salts thereof.

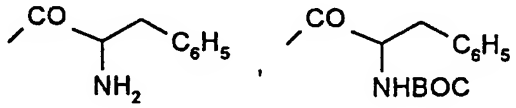
Particularly preferred compounds of the general formula (I) are those

in which

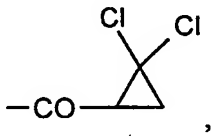
I.:

R^1 represents hydrogen, straight-chain or branched alkyl having up to 3 carbon atoms, fluorine, chlorine, bromine, nitro or trifluoromethyl,

R^2 represents formyl or straight-chain or branched acyl, or alkoxycarbonyl each having up to 5 carbon atoms in the alkyl group,
or represents benzoyl, which is optionally substituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl, each having up to 3 carbon atoms in the alkyl group,
or represents a group of a formula



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ or a residue of the formula



in which

R^9 denotes straight-chain or branched alkyl having up to 4 carbon atoms, which is optionally substituted by phenyl, or
denotes phenyl, which is optionally substituted by trifluoromethyl, cyano or straight-chain or branched alkyl having up to 3 carbon atoms,

R^{10} and R^{11} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 3 carbon atoms or phenyl,

R^{12} denotes straight-chain or branched alkoxycarbonyl having up to 3 carbon atoms or carboxy,

a denotes a number 0, 1, 2 or 3,

b denotes a number 1, 2 or 3,

R^{13} denotes straight-chain or branched alkyl having up to 3 carbon atoms,

R^3 represents hydrogen or straight-chain or branched alkyl having up to 3 carbon atoms, or has the abovementioned meaning of R^2,

T represents an oxygen or sulfur atom,

A represents hydrogen, hydroxyl, cyclopropyl, cyclobutyl, cyclopentyl, carboxyl, or straight-chain or a branched alkoxycarbonyl or alkoxy each having up to 3 carbon atoms, or straight-chain or branched alkyl having up to 5 carbon atoms which is optionally monosubstituted by cyano or by a group of a formula $-CO-R^{14}$, $-CO-NR^{15}R^{16}$,
in which

R^{14} denotes hydroxyl, cyclopropyloxy, cyclopentyloxy, cyclohexyloxy or straight-chain or branched alkyl or alkoxy having up to 5 carbon atoms,

R^{15} and R^{16} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 3 carbon atoms or phenyl,

and

R^4 represents phenyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, adamantyl, phenoxy, N-methyl-pyrrolyl, cyclopropyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine, furanyl, thienyl, pyridyl, nitro, trifluoromethyl, difluoromethyl, cyano,

carboxyl, methylthio, straight-chain or branched alkyl, alkoxy, acyl or alkoxycarbonyl each having up to 9 carbon atoms, or
by phenyl, which is optionally monosubstituted to trisubstituted by fluorine, chlorine, bromine, nitro, formyl or straight-chain or branched alkoxy, alkoxycarbonyl, acyl or alkyl each having up to 4 carbon atoms, which is optionally substituted by hydroxyl,

with the proviso that A does not denote methyl,
or
II.:
if A represents a methyl group,

R^1, T and R^4 have the meaning described in part I,

and in this case

R^2 and R^3 are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 3 carbon atoms, or
represent formyl or straight-chain or branched acyl or alkoxycarbonyl each having up to 4 carbon atoms,
or represent benzoyl, which is optionally substituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, straight-chain or branched alkoxy or alkoxycarbonyl each having up to 3 carbon atoms,
or represent a group of a formula $-CO-NH_2$, $SO_2(NH)_9R^{37}$, $-SO_2NH_2$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ or -CO-X,
in which

R^{33} has the abovementioned meaning of R^9 and is identical or different to the latter,

R^{34} and R^{35} are identical or different and denote hydrogen or methyl,

R^{37} has the abovementioned meaning of R^{12} or denotes hydroxyl or straight-chain or branched alkoxy or oxacyl each having up to 4 carbon atoms,

R^{36} denotes hydroxyl or straight-chain or branched alkoxy having up to 3 carbon atoms,

d has the abovementioned meaning of a,

e denotes a number 1, 2, 3 or 4,

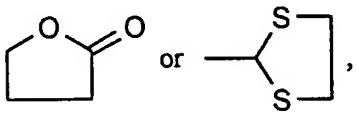
f has the abovementioned meaning of b,

g denotes a number 0 or 1,

X denotes pyrrolyl, N-methyl-pyrrolyl, furyl or isoxacolyl, which are optionally monosubstituted to trisubstituted by nitro, methyl or ethyl,

or

X denotes a residue of the formula



,

b denotes a number 1 or 2,

or
III.:

R^1, A and T have the abovementioned meaning described in part I,

or

A represents methyl,
in which
R^2 and R^3 have the meaning described in part II,

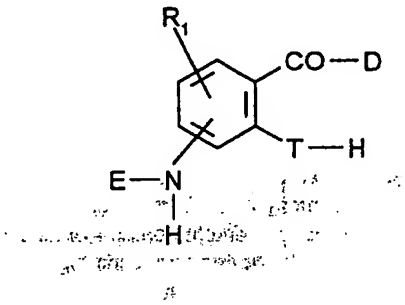
and in this case

R^4 represents pyridyl, which optionally is up to substituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, fluorine, chlorine, bromine, nitro, trifluoromethyl, trifluoromethoxy, difluoromethyl, difluoromethoxy, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 5 carbon atoms,

and salts thereof.

A process for the preparation of the compounds of the general formula (I) has additionally been found, characterized in that

[A] compounds of the general formula (II)



(II)

in which

R^1 and T have the abovementioned meaning,

and

E denotes straight-chain or branched acyl having up to 4 carbon atoms, preferably acetyl,

and

D represents-$(CH_2)_2$-$(C_1$-$C_4)$-alkoxycarbonyl,

by reaction with compounds of the formula (III)

$$R_4—CO—CH_2—L \qquad (III)$$

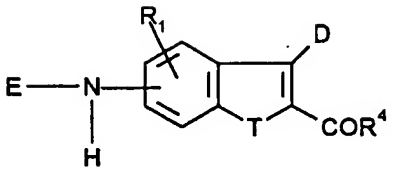
in which

R^4 has the abovementioned meaning

and

L represents a leaving group such as chlorine, bromine, tosylate or mesylate,

in inert solvents in the presence of a base,
firstly are converted into compounds of the general formula (Ia)



(Ia)

in which
R^1, T, D and E have the abovementioned meaning, and then the compounds (Ia) are reacted with compounds of the formula (IV) or (IVa)

$$R^2\text{-}L' \qquad \text{(IV)}$$

$$R^3\text{-}L' \qquad \text{(IVc)}$$

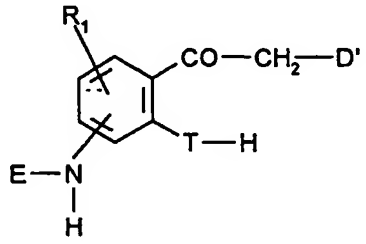
in which

R^2 and R^3 have the abovementioned meaning,

and

L' has the abovementioned meaning of L and is identical or different to the latter,

in inert solvents, if appropriate, in the presence of a base,
and in the case of other radicals mentioned for the meaning of substituent A
D is varied, if appropriate, by splitting off protecting groups, alkylation and/or hydrolysis, or
[B] and in the case of A = CH_2-CO-R^{14}
first compounds of the general formula (IIa)



(IIa)

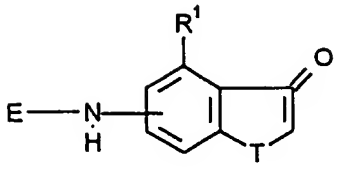
in which

E, T and R^1 have the abovementioned meaning

and

D' denotes halogen, preferably chlorine,

are converted in the presence of NaAc and an alcohol, preferably ethanol, to compounds of the general formula (V)

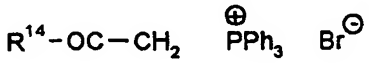


(V)

in which

R^1, E and T have the abovementioned meaning,

then are reacted with compounds of the general formula (VI)

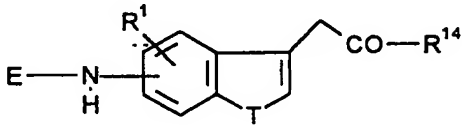


(VI)

in which

R^{14} has the abovementioned meaning

to compounds of the general formula (VII)



(VII)

in which

E, R^1, T and R^{14} have the abovementioned meaning,

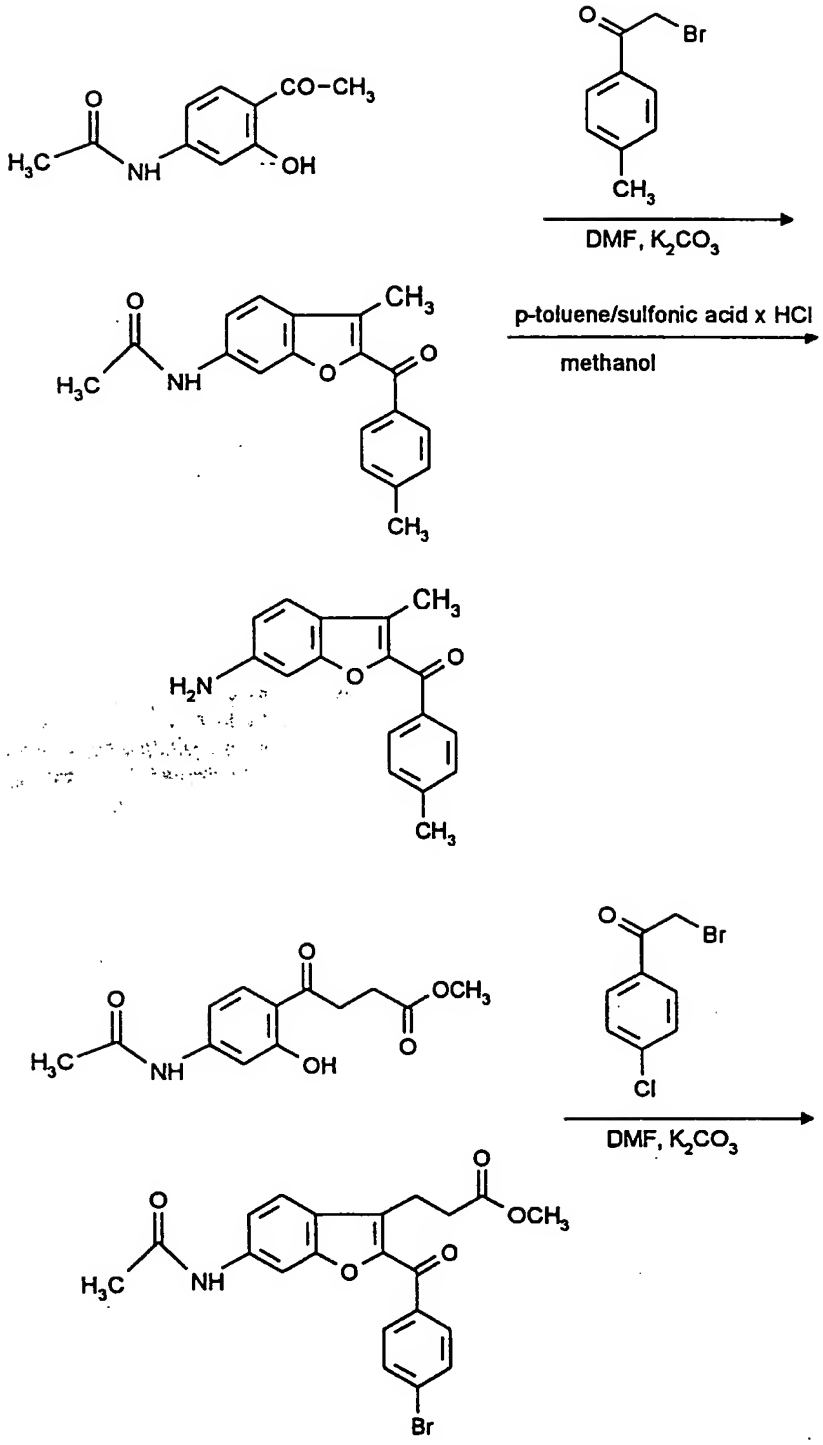
in inert solvents,
and in a last step are reacted with compounds of the general formula (VIII)

$$R^4\text{-CO-L'} \qquad \text{(VIII)}$$

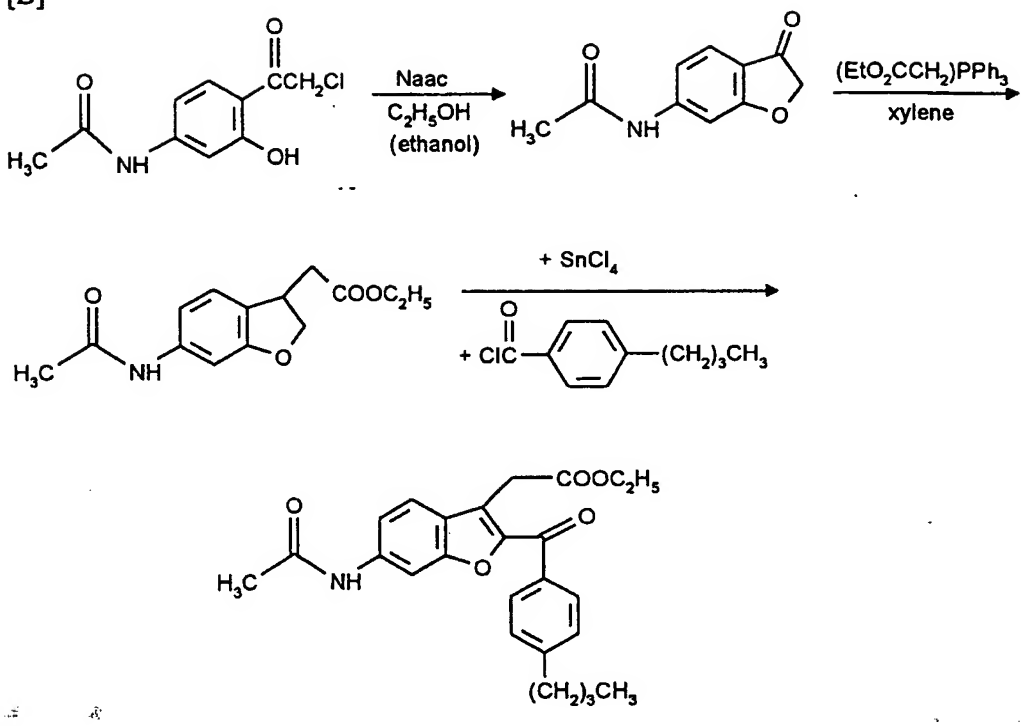
in which
R^4 and L' has the abovementioned meaning,
in the presence of '$SnCl_4$,
and
optionally followed by reacting with compounds of the general formulae (IV) or (IVa).

The process according to the invention can be illustrated by way of example by the following equations:

[A]


CO-CH3
OH
H3C
NH
O
Br
CH3
DMF, K2CO3
p-toluene/sulfonic acid x HCl
methanol
H2N
OCH3
Cl

[B]



Suitable solvents are customary organic solvents which do not change under the reaction conditions. These include ethers such as diethyl ether, dioxane or tetrahydrofurane, acetone, dimethylsulfoxide, dimethylformamide or alcohols such as methanol, ethanol, propanol or halogenohydrocarbons such as dichlormethane, trichloromethane, tetrachloromethane or xylol. Methanol, dichloromethane and xylol are preferred.

Suitable bases generally are inorganic or organic bases. These preferably include alkali metal hydroxides such as, for example, sodium hydroxide, sodium hydrogencarbonate or potassium hydroxide, alkaline earth metal hydroxides such as, for example, barium hydroxide, alkali metal carbonates such as sodium carbonate, potassium carbonate, alkaline earth metal carbonates such as calcium carbonate, or alkaline metal oder alkaline earth metal alkoxides such as sodium methoxide or potassium methoxide, sodium ethoxide or potassium ethoxide or potassium tert.butoxide, or organic amines (trialkyl(C_1-C_6)amines such as triethylamine, or heterocycles such as 1,4-diazabicyclo[2.2.2]octane (DABCO), 1,8-diazabicyclo[5.4.0]undec-7-ene (DBU), or amides such as sodium amides, lithium butyl amide or butyllithium, pyridine or methylpiperidine. It is also possible to employ alkali metals, such as sodium or its hydrides such as sodium hydride, as bases. Potassium carbonate, triethylamine sodium hydrogencarbonate and sodium-hydroxide are preferred.

The base is employed in an amount from 1 mol to 10 mol, preferably from 1.0 mol to 4 mol, relative to 1 mol of the compounds of the general formula (III).

The compounds of the general formula (Ia) are new and can be prepared as shown above.

The componds of the general formula (II), (IIa), (III), (IV), (IVa), (V), (VI), (VII) and (VIII) are known or can be prepared by published methods.

The compounds according to the invention specifically inhibit the production of superoxide by polymorphonuclear leucocytes (PMN) without impairing other cell functions such as degranulation or aggregation. The inhibition was mediated by the elevation of cellular cAMP probably due to inhibition of the type IV phosphodiesterase responsible for its degradation

They can therefore be employed in medicaments for controlling acute and chronic inflammatory processes.

The compounds according to the invention are preferably suitable for the treatment and prevention of acute and chronic inflammations of the airways, such as emphysema, alveolitis, shock lung, asthma, bronchitis, arteriosclerosis, arthrosis, inflammations of the gastrointestinal tract and myocarditis. The compounds according to the invention are additionally suitable for reducing the damage to infarct tissue after reoxygenation. In this case the simultaneous admin-

istration of allopurinol to inhibit xanthine oxidase is of advantage. Combination therapy with superoxide dismutase is also of use.

Test description

1. Preparation of human PMN

Blood was taken from healthy subjects by venous puncture and neutrophils were purified by dextran sedimentation and resuspended in the buffered medium.

2. Inhibition of FMLP-stimulated production of superoxide racidal anions. Neutrophils (2.5×10^5 ml^{-1}) were mixed with cytochrome C (1.2 mg/ml) in the wells of a microtitre plate. Compounds according to the invention were added in dimethyl sulphoxide (DMSO). Compound concentration ranged from 2.5 nM to 10 μM, the DMSO concentration was 0.1% v/v in all wells. After addition of cytochalasin b (5 μg x ml^{-1}) the plate was incubated for 5 min at 37°C. Neutrophils were then stimulated by addition of 4×10^{-8} M FMLP and superoxide generation measured as superoxide dismutase inhibitable reduction of cytochrome C by monitoring the OD_{550} in a Thermomax microtitre plate spectrophotometer. Initial rates were calculated using a Softmax kinetic calculation programme. Blank wells contained 200 units of superoxide dismutase.

The inhibition of superoxide production was calculated as follows:

$$\frac{[1-((Rx-Rb))]}{((Ro - Rb))} \cdot 100$$

Rx = Rate of the well containing the compound according to the invention.

Ro = Rate in the control well.

Rb = Rate in the superoxide dismutase containing blank well.

3. Measurement of PMN cyclic AMP concentration

The compounds according to the invention were incubated with 3.7×10^6 PMN for 5 min at 37°C before addition of 4×10^{-8} M FMLP. After 6 min protein was precipitated by the addition of 1% v/v conc. HCl in 96% v/v ethanol containing 0.1 mM EDTA. After centrifugation the ethanolic extracts were evaporated to dryness under N_2 and resuspended in 50 mM Tris/HCl pH 7.4 containing 4 mM EDTA. The cyclic AMP concentration in the extracts was determined using a cyclic AMP binding protein assay supplied by Amersham International plc. Cyclic AMP concentrations were expressed as percentage of vehicle containing control incubations.

4. Assay of PMN phosphodiesterase

PMN suspensions (10^7 cells/ml) were sonicated for 6 x 10 sec on ice.

Aliquots (100 μl) were incubated for 5 min at 37°C with the compounds according to the invention or vehicle before the addition of ^{3}H-cAMP (1 mM and 200 nCi per incubation). After 20 min the reaction was stopped by heating at 100°C for 45 seconds. After cooling 100 mg of 5'-nucleotidase was added to each tube and the samples incubated for 15 min at 37°C. The conversion to ^{3}H-adenosine was determined was ion-exhange chromatography on Dowex AG-1x (chloride form) followed by liquid scintillation counting. Percentage inhibition was determined by comparison to vehicle containing controls.

5. Effect of intravenously administered compounds on the FMLP-induced skin oedema guinea pigs

Guinea pigs (600 - 800 g) were anaesthetized with pentobarbitone sodium (40 mg/kg, i.p.) and injected (i.v.) with a 0.5 ml mixture of pentamine sky blue (5% W/V) and ^{125}I-HSA (1 μli/animal). 10 minutes later 3 intradermal injections of FMLP (10 μg/site), 1 injection of histamine (1 μg/site) and 1 injection of vehicle (100 μl of 0.2% DMSO V/V in Hanks Buffered salt solution) were made on the left hand side of the animal (preinjection sites). 5 minutes later the drug (1 ml/kg) or the vehicle (50% PEG 400 V/V in distilled water, 1 mg/kg) was administered (i.v.). 10 minutes later an identical pattern of interadermal injections was made on the opposite flank of the animal (post-injection sites). These responses were allowed to develop for 15 minutes before the animal was sacrificed and a blood sample taken.

Skin sites and plasma samples were counted for 1 minute on a gamma counter an the degree of oedema calculated as μl plasma/skin site. Statistical analysis was done by a paired t-test on the mean of the 3 preinjection site values of μl plasma obtained for FMLP/animal. The percentage inhibition of drug or vehicle was calculated as follow

$$X\%=1-\frac{\bar{X}\ \mu l\ plasma\ (post\text{-}injection\ site)}{\bar{X}\ \mu l\ plasma\ (pre\text{-}injection\ site)}\times 100$$

6. Effect of orally administered compounds on the FMLP-induced skin oedema of guinea-pigs
in vivo Test's p.o.
Guinea-pigs (600 - 800 g) were fasted overnight and orally treated with vehicle (1% Tylose w/v at 5 ml/kg) or drug (10 mg/kg; 2 mg/ml in 1% Tylose at 5 ml/kg) 40 minutes later the animals were anestized with pentobarbitone sodium (40 mg/kg, i.P.) and 0.6 ml of a mixture of pontamine sky blue (5% w/v) and ^{125}I-HSA (1 µ ci/animal) was injected (i.v.). 90 minutes after oral pretreatment FMLP (50 µg/site) was injected (i.d.) at 4 different sites, histamine (1 µg/site) and vehicle (100 µl, 1% DMSO v/v in Hanks buffered salt solution) were both injected (i.d.) at 2 different sites.
The responses were allowed to develop for 30 minutes before the animal was sacrificed and a blood sample taken. Skin sites and plasma samples were counted for 1 minute on a gamma counter. The degree of oedema was calculated as µl plasma/skin site. Statistical analysis was carried out by a Mann-Whitney U-test on the mean of the 4 values of µl Plasma obtained for FMLP/animal.

The new active compounds can be converted in a known manner into the customary formulations, such as tablets, coated tablets, pills, granules, aerosols, syrups, emulsions, suspensions and solutions, using inert, nontoxic, pharmaceutically suitable excipients or solvents. In this connection, the therapeutically active compound should in each case be present in a concentration of about 0.5 to 90% by weight of the total mixture, i.e. in amounts which are sufficient in order to achieve the dosage range indicated.

The formulations are prepared, for example, by extending the active compounds with solvents and/or excipients, if appropriate using emulsifiers and/or dispersants, where, for example, in the case of the use of water as a diluent, organic solvents can be used as auxiliary solvents if appropriate.

Administration is carried out in a customary manner, preferably orally or parenterally, in particular perlingually or intravenously.

In the case of parenteral administration, solutions of the active compound can be employed using suitable liquid vehicles.

In general, it has proved advantageous on intravenous administration to administer amounts from about 0.001 to 10 mg/kg, preferably about 0.01 to 5 mg/kg of body weight to achieve effective results, and on oral administration the dosage is about 0.01 to 25 mg/kg, preferably 0.1 to 10 mg/kg of body weight.

In spite of this, it may be necessary to depart from the amounts mentioned, in particular depending on the body weight or the type of application route, on individual behaviour towards the medicament, the manner of its formulation and the time or interval at which administration takes place. Thus, in some cases it may be sufficient to manage with less than the abovementioned minimum amount, while in other cases the upper limit mentioned must be exceeded. In the case of administration of relatively large amounts, it is advisable to divide these into several individual doses over the course of the day.

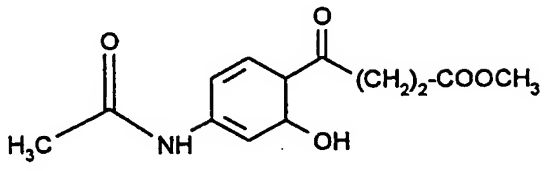
Solvents

I	petrolether : ethylacetate 1:1
II	petrolether : ethylacetate 5:1
III	petrolether : ethylacetate 5:2
IV	dichlormethane : methanol 95:5
V	dichlormethane : methanol 5:1
DMF	dimethylformamide

Starting compounds

Example I

4-Acetamido-2-hydroxy-g-oxo-benzen-butanoic acid, methylester

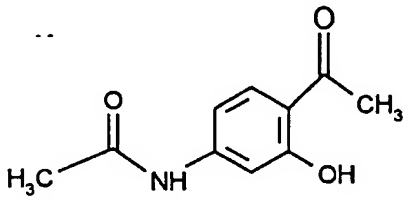


67.5 g (0.41 mol) 3-acetamidoanisol are suspended in 200 ml 1,2-dichloroethane and cooled in an ice bath. 217 g (1.64 mol) $AlCl_3$ and after it 73.9 g (0.49 mol) 3-carbomethoxypropionylchloride were added successively. Stirring was continued 1/2 hour. After 5 hours the reaction was quenched with ice and ethylacetate and water were added. The organic layer was seperated, washed with water, dried over

$MgSO_4$ and concentrated in vacuo. The residue was recrystallized from dioxane and water.
Yield: 52 g (49% of theory)

Example II

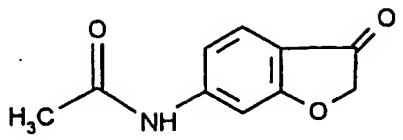
N-(4-Acetyl-3-hydroxy-phenyl)-acetamide



67.5 g (0.41 mol) 3-acetamidoanisol are suspended in 200 ml 1,2-dichloroethane and cooled in an ice bath. 217 g (1.64 mol) $AlCl_3$ and after it 38.5 g (0.49 mol) acetylchloride were added successively. Stirring was continued 1/2 hour. After 5 hours the reaction was quenched with ice and ethylacetate and water were added. The organic layer was seperated, washed with water, dried over $MgSO_4$ and concentrated in vacuo. The residue was recrystallized from dioxane and water. Yield: 39 g (49% of theory)

Example III

6-Acetylamido-2,3-dihydro-1-benzofuran-3-on

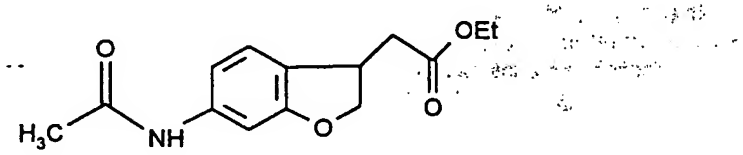


A solution of 10 g (43 mmol) 5-acetylamido-2-(2-chloroacetyl)-phenol and 12 g (140 mmol) sodium acetate in 125 ml ethanol was refluxed over night, cooled to room temperature, followed by addition of 300 ml H_2O. The ethanol was removed under reduced pressure and the residue cooled, filtered and dried. One obtained 8.5 g 6-acetylamido-2,3-dihydro-1-benzofuran-3-on, which was used for the next reaction without further purification.

^{1}H-NMR (200MHz, D_6-DMSO): δ = 2.11 (s, 3H), 4.76 (s, 2H), 7.12 (dd, 1H), 7.57 (d, 1H), 7.72 (d, 1H).
MSCCl): m/z (%) = 192 (100) [M^+ + 1]
R_f = 0.28 (PE/EE = 1:1)

Example IV

2-[3-(6-acetylamido-1-benzofuranyl)]ethyl acetate



A suspension of 224 g (1.17 mmol) III and 490 g (1.4 mmol) (carbethoxymethylene)-triphenylphosphorane in 7.5 l xylene was refluxed over night. Another 389 g (1.17 mmol) (carbethoxymethylenemethylene)-triphenylphosphorane were added and the reaction mixture was refluxed for further 24 hours, concentrated under reduced pressure and the residue suspended in ether. The solids were filtered off and the organic phase concentrated in vacuo.

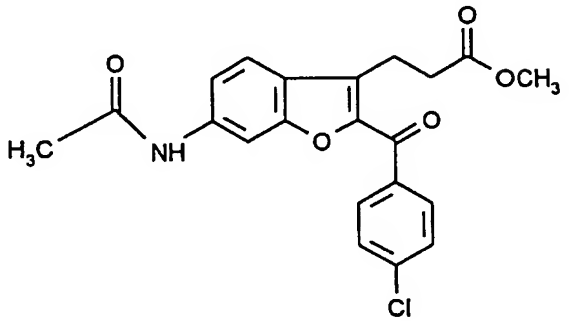
Purification of the crude followed by chromatography (PE/EA 1:1) yielding 115 g (38 %) 2-[3-(6-acetylamido-1-benzofuranyl)]ethyl acetate.

^{1}H-NMR (250 MHz, $CDCl_3$): δ = 1.26 (t, 3H), 2.20 (s, 3H), 3.66 (s, 2H), 4.18 (g, 2H), 7.13 (dd, 1H), 7.47 (d, 1H), 7.59 (s, 1H), 7.97 (d, 1H)
MSCCl, NH_3): m/z (%) = 262 (100) [M^+ + 1]
R_f = 0.19 (PE/EE = 1:1).

Preparation Examples

Example 1

3-[6-Acetamido-2-(4-chloro-benzoyl)-3-benzofuranyl]propanoic acid, methylester

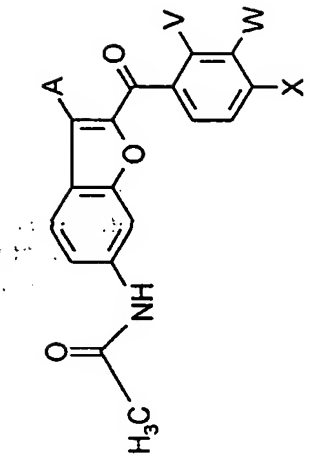


1.5 g (3.75 mmol) of 2'-Hydroxy-3-oxo-4'-[(acetamido)]benzenebutanoic acid, methylester and 1,13 g (4.1 mmol) of 2-bromo-4-chloroacetophenone were dissolved in 5 ml DMF and 1,55 g (11.25 mmol) of potassium carbonate were added. The suspension was heated to 60°C for 1h and ethylacetate was added. The organic phase was washed three times with water, one time with a NaCl solution, dried over Na_2SO_4 and concentrated in vacuo. The residue was further purified by crystallisation (ethanol).

Yield: 0.75 g (50%)
R_f = 0,12 (III)

The compounds shown in Table 1 were prepared in analogy to the procedure of Example 1:

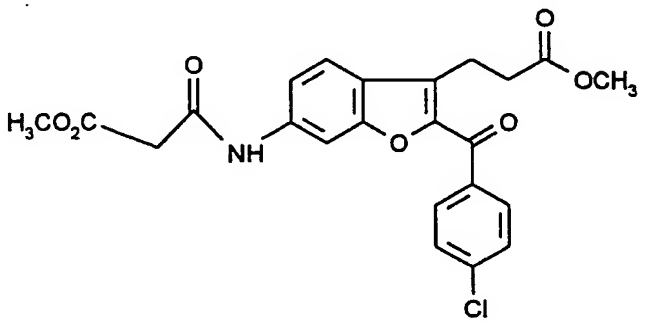
Table 1:



Ex.-No.	V	W	X	A	R_f*	Yield (% of theory)
2	Cl	H	Cl	$COOC_2H_5$	0,53 (IV)	72
3	H	H	F	$CH_2CH_2COOCH_3$	0,29 (I)	28
4	H	H	CN	$CH_2CH_2COOCH_3$	0,22 (I)	46
5	H	CH_3	Cl	$CH_2CH_2COOCH_3$	0,23 (I)	66
6	H	H	SCH_3	$CH_2CH_2COOCH_3$	0,31 (I)	52
7	H	Cl	H	$CH_2CH_2COOCH_3$	0,24 (I)	58
8	H	OCH_3	H	$CH_2CH_2COOCH_3$	0,18 (I)	68
9	H	H	Cl	$CO_2C_2H_5$	0.4 (IV)	20

Example 10

N-[2-(4-Chloro-benzoyl)-3-(2-methoxycarbonyl-ethyl)-benzofuran-6-yl]-malonamic acid methyl ester



a)

3-[6-Amino-2-(4-chloro-benzoyl)-3-benzofuranyl]propanoic acid, methylester

3.1 g (7.7 mmol) of 2-(4-chloro-benzoyl)-6-acetamido-3-benzofuranylpropanoic acid methylester were suspended in 40 ml methanol. 20 ml 2.6 N HCl were added with stirring. The reaction mixture was heated to reflux. After 1 hour a clear solution was obtained. After 3 hours reflux the solution was cooled to room temperature and ethylacetate was added. The organic layer was washed with NaOH-solution, two times with water, dried over Na_2SO_4 and concentrated in vacuo. The residue was further purified by crystallisation.

Yield: 2.26 g (82%)

R_f: 0.34 (III)

b)

0.5 g (1.4 mmol) of 3-[6-Amino-2-(4-chloro-benzoyl)-3-benzofuranyl]propanoic acid methylester were dissolved in 20 ml methylenechloride and 4 ml triethylamine(EtN_3). 0.6 g (4.5 mmol) (Cl-CO-CH_2-$COOCH_3$) methylmalonylchloride were added dropwise. The mixture was heated to reflux for 12h. After removing the solvent, ethylacetate and water were added. The organic layer was washed twice with water and NaCl-solution, dried over Na_2SO_4 and concentrated in vacuo. The residue was further purified by recrystallisation (methanol).

Yield: 0.4 g (62.5%)

R_f: = 0.88 (V)

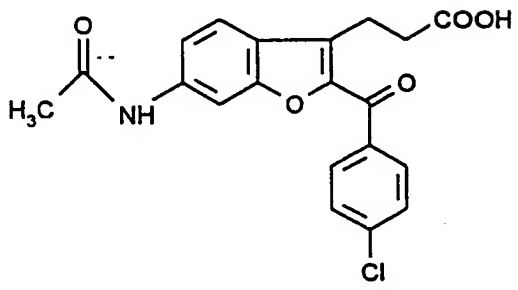
The compounds shown in table 2 were prepared in analogy to the procedure of example 10:

Table 2:

Ex.-No.	W	X	A	R^2	R^3	R_f*	Yield (% of theory)
11	H	Cl	$CH_2CH_2COOCH_3$	$COCH_2CH_2COOCH_3$	H	0.3 (III)	61
12	H	Cl	$CH_2CH_2COOCH_3$	SO_2CH_3	H	0.58 (IV)	12
13	H	Cl	$CH_2CH_2COOCH_3$	$SO_2CH(CH_3)_2$	H	0,15 (III)	14
14	H	Cl	$CH_2CH_2CO_2CH_3$	$SO_2C_2H_5$	$SO_2C_2H_5$	0,1 (II)	58
15	H	Cl	$CH_2CH_2CO_2CH_3$	$SO_2(CH_2)_2CH_3$	H	0,24 (III)	18
16	H	Cl	$CH_2CH_2CO_2CH_3$	SO_2-C_6H_5	$SO_2C_6H_5$	0,33 (III)	88
17	CN	H	$CH_2CH_2CO_2CH_3$		H	0,76 (I)	70
18	H	H	$CH_2CH_2CO_2CH_3$	-CO-S-C_2H_5	H	0,75 (I)	51

Example 19

3-[6-Acetamido-2-(4-chlorobenzoyl)-3-benzofuranyl]propanoic acid

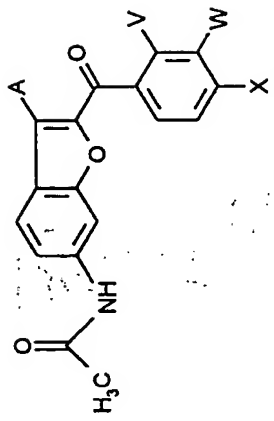


1.5 g (4.2 mmol) of the compound from starting compounds Example III were dissolved in 50 ml methanol/tetrahydrofuran (1:1) and 5.5 ml of a 2 N NaOH solution were added. The mixture was stirred at r.t. for 24 hours, dissolved in water and acidified with 1 N hydrochloric acid. The precipitate was filtered off, washed several times with water and dried in vacuo. The further reaction was carried out as described in Example 1.

Yield: 96%
R_f: 0,54 (V)

The compounds shown in Table 3 were prepared in analogy to the procedure of Example 19:

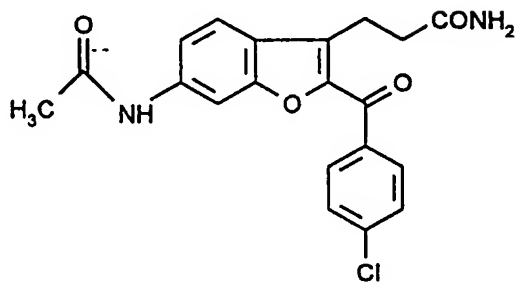
Table 3



Ex.-No.	V	W	X	A	R_f*	Yield : (% of theory)
20	H	H	Cl	$CH_2CH_2CO_2Na$	0,58 (IV)	98
21	H	H	SCH_3	CH_2CH_2COOH	0,68 (V)	88
22	H	H	F	CH_2CH_2COOH	0,51 (V)	83
23	H	Cl	H	CH_2CH_2COOH	0,51 (V)	95
24	H	OCH_3	H	CH_2CH_2COOH	0,54 (V)	87

Example 25

3-[6-Acetamido-3-(2-carbonamid-ethyl)-2-(4-chloro-benzoyl)-benzofuran

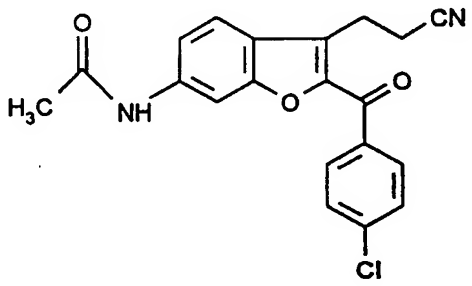


0.56 g (1.3 mmol) of the acid from example 1 were dissolved in 5 ml THF, 0.25 g (1.25 mmol) 1,1'-carbonyl-bis-1H-imidazole were added and the mixture was stirred at room temperature for 12 hours. Subsequently NH_3-gas was added for 2 h using an inlet pipe. After one additional hour stirring at r.t. the solvent was distilled off in vacuo. The residue was taken up in ethylacetate and washed three times with water, one time with a $NaHCO_3$ solution and one time with a NaCl solution. The organic phase was dried over $MgSO_4$ and the solvent was removed in vacuo.

Yield: 83%
R_f: 0,72 (V)

Example 26

3-[6-Acetamido-2-(4-chloro-benzoyl)-3-(2-cyano-ethyl)-benzofuran

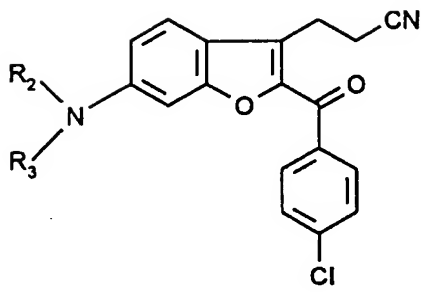


0.56 g (1.3 mmol) of example 25 were dissolved in 15 ml dioxane. 0.2 ml (2.6 mmol) pyridine were added, cooled to 5-10°C and 0.22 ml (1.56 mmol) trifluoroacetic anhydride were added dropwise. The mixture was stirred for 3 hours at room temperature. The mixture was added to water, washed twice with dichloromethane. The organic layer was dried and the solvent removed in vacuo.

Yield: 73%
R_f: 0,49 (IV)

The compounds shown in Table 4 were prepared in analogy to the procedure of Example 26:

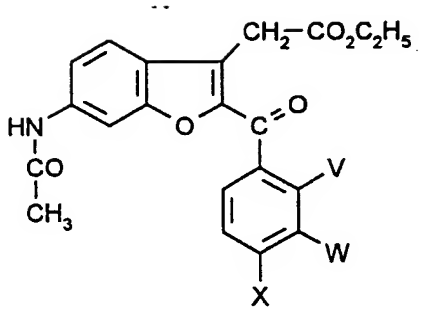
Table 4:



Ex.-No.	R^2	R^3	R_f*	Yield (% of theory)
27	CH_3SO_2-	H	0,66 (IV)	40
28	CH_3SO_2-	CH_3SO_2-	0,7 (IV)	55

The compounds shown in Table 5 are prepared by Friedel-Crafts Reaction of Example IV.

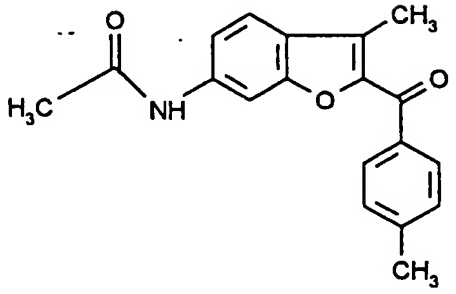
Table 5



Example No.	V	W	X	R_f*	yield (% of theory)
29	H	H	$-C_4H_9$	0.22 (I)	31
30	H	H	$-CH_3$	0.21 (I)	86
31	H	H	$-C_6H_5$	0.5 (IV)	70
32	Cl	H	-Cl	0.6 (IV)	97
33	H	H	-Br	0.25 (I)	76
34	H	Br	H	0.33 (II)	68
35	H	CN	H	0.25 (I)	75

Example 36

N-[3-Methyl-2-(4-methyl-benzoyl)-benzofuran-6-yl]acetamide

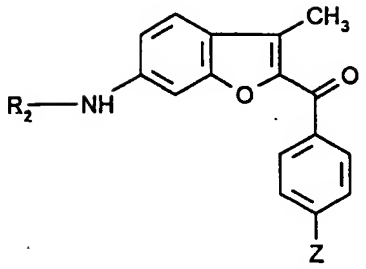


0.72 g (3.75 mmol) of N-(4-acetyl-3-hydroxy-phenyl)acetamide and 0.81 g (4.1 mmol) of 2-bromo-4-methylacetophenone were dissolved in 5 ml DMF and 1,55 g (11.25 mmol) of potassium carbonate were added. The suspension was heated to 60°C for 1 h and ethylacetate was added. The organic phase was washed three times with water, one time with a NaCl solution, dried over Na_2SO_4 and concentrated in vacuo. The residue was further purified by crystallisation (ethanol).

Yield: 0.58 g (50%)
R_f = 0,12 (III)

The compounds shown in Table 6 were prepared in analogy to the procedure of Example 36:

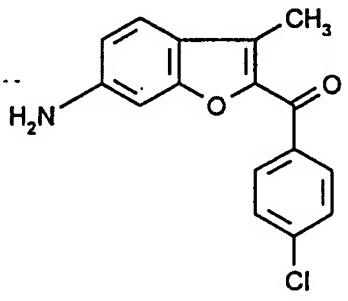
Table 6:



Ex.-No.	Z	R^2	R_f*	Yield (% of theory)
37	CH_3	CO_2CH_3	0.64 (IV)	87
38	CH_3	CHO	0.91 (IV)	64
39	CH_3	$CH_2CO_2C_2H_5$	0.69 (IV)	20
40	Cl	$COCH_3$	0.33 (IV)	38
41	C_6H_5	$COCH_3$	0.35 (I)	53

Example 42

(6-Amino-3-methyl-benzofuran-2-yl)-(4-chlorophenyl)-methanone



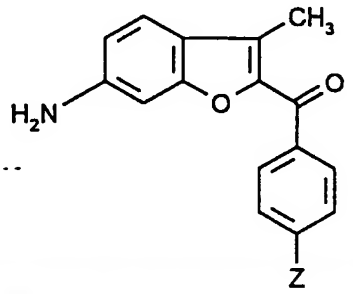
3.1 g (10 mmol) of N-[3-methyl-2-(4-methyl-benzoyl)benzofuran-6-yl]-acetamide were suspended in 40 ml methanol. 20 ml 2.6 N HCl were added with stirring. The reaction mixture was heated to reflux. After 1 hour a clear solution

was obtained. After 3 hours reflux the solution was cooled to room temperature and ethylacetate was added. The organic layer was washed once with NaOH-solution, two times with water, dried over Na_4SO_4 and concentrated in vacuo. The residue was further purified by crystallisation.

Yield: 2,2 g (83%
R_f: 0.7 (IV)

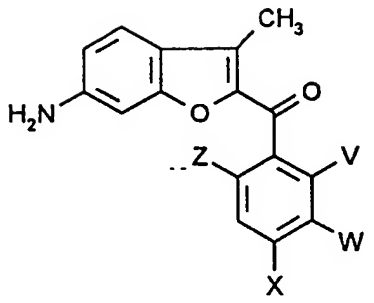
The compounds shown in Tables 7 and 8 were prepared in analogy to the procedure of example 42:

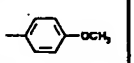
Table 7:



Ex.-No.	Z	R_f*	Yield (% of theroy)
43	CH_3	0.62 (IV)	87
44	C_6H_5	0.38	71

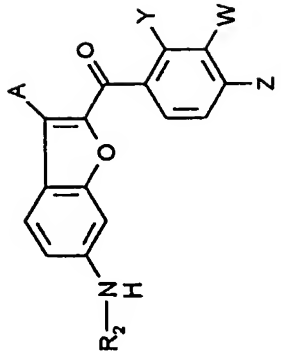
Table 8



Example No.	X	V	Z	W	R_f	yield
45	CH_3	CH_3	CH_3	H	0.98 (IV)	70
46	Br	H	H	H	0.45 (I)	55
47	NO_2	H	H	H	0.83 (I)	22
48	H	H	H	CN	0.38 (IV)	92
49	CN	H	H	H	0.77 (I)	70
50	Cl	Cl	H	H	0.26 (I)	65
51	H	H	H	NO_2	0.79 (I)	88
52	H	H	H	Br	0.27 (I)	71
53	H	H	H	OCH_3	0.21 (I)	96
54	H	H	H	CH_3	0.25 (I)	73
55	H	H	H	CF_3	0.35 (I)	37
56		H	H	NO_2	0.37 (II)	40

The compounds shown in Table 9 were prepared in analogy to the procedure of example 36

Table 9:



Example No.	Y	Z	W	R^2	A	R_f	yield
57	H	C_6H_5	H	$CONH_2$	CH_3	0.18 (I)	76
58	H	NO_2	H	$COCH_3$	CH_3	0.28 (I)	63
59	H	Br	H	$COCH_3$	CH_3	0.32 (I)	73
60	H	H	CN	$COCH_3$	CH_3	0.47 (IV)	29
61	H	CN	H	$COCH_3$	CH_3	0.27 (I)	13
62	Cl	Cl	H	$COCH_3$	CH_3	0.4 (I)	46

Table 9: (continuation)

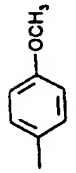
Example No.	Y	Z	W	R^2	A	R_f	yield
63	H	H	NO_2	$COCH_3$	CH_3	0.29 (I)	16
64	H	H	Br	$COCH_3$	CH_3	0.37 (I)	43
65	H	H	OCH_3	$COCH_3$	CH_3	0.29 (I)	76
66	H	H	CH_3	$COCH_3$	CH_3	0.13 (III)	58
67	H	H	CF_3	$COCH_3$	CH_3	0.13 (III)	35
68	H		NO_2	$COCH_3$	CH_3	0.24 (I)	7
69	H	CH_3	H		CH_3	0.18 (III)	30
70	H	CH_3	H		CH_3	0.22 (III)	35

Table 9: (continuation)

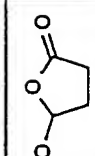
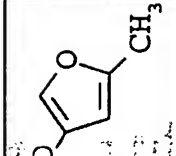
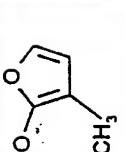
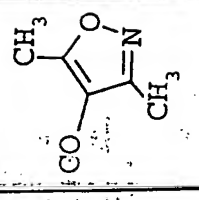
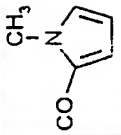
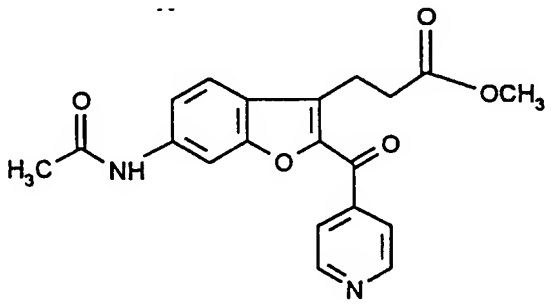
Example No.	Y	Z	W	R^2	A	R_f	yield
71	H	CH_3	H		CH_3	0.08 (II)	40
72	H	CH_3	H		CH_3	0.02 (III)	42
73	H	CH_3	H		CH_3	0.12 (III)	30
74	H	CH_3	H		CH_3	0.26 (II)	35
75	H	CH_3	H		CH_3	0.26 (III)	40

Table 9: (continuation)

Example No.	Y	Z	W	R^2	A	R_f	yield
76	H	CH_3	H		CH_3	0.12 (III)	30
77	H	CH_3	H		CH_3	0.26 (II)	35

Example 78

3-[6-Acetylamino-2-(pyridine-4-carbonyl)-3-benzofuranyl]propanoic acid, methylester

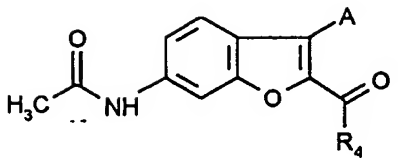


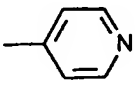
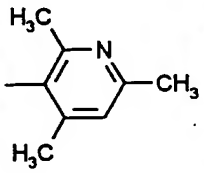
1.5 g (3.75 mmol) of 2'-Hydroxy-3-oxo-4'-[(acetamido)]benzenebutanoic acid, methylester and 0.82 g (4.1 mmol) of 2-bromo-1-(4-pyridyl)-ethanone were dissolved in 5 ml DMF and 1,55 g (11.25 mmol) of potassium carbonate were added. The suspension was heated to 50°C for 1 h, ethylacetate was added. The organic phase was washed three times with water, one time with a NaCl solution, dried over Na_2SO_4 and concentrated in vacuo. The residue was further purified by chromatography.

Yield: 0.412 g (30%)
R_f = 0,1, (I)

The compounds shown in Table 10 were prepared in analogy to the procedure of Example 78:

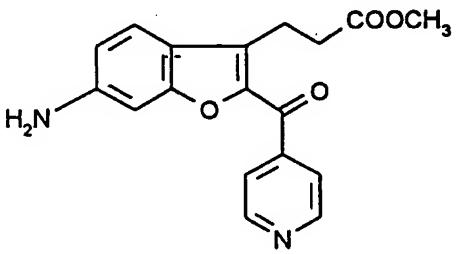
Table 10:



Ex.-No.	A	R^4	R_f*	Yield (% of theory)
79	$-COOC_2H_5$		0,1 (I)	30
80	$-CH_2CH_2CO_2CH_3$		0,32 (IV)	72

Example 81

3-[6-Amino-2-(chloro-4-benzoyl)-3-benzofuranyl]propanoic acid, methylester



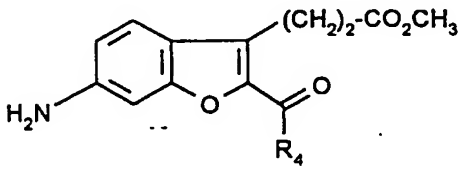
2.8 g (7.7 mmol) of 2-(4-chloro-benzoyl)-6-acetamido-3-benzofuranpropanoic acid methylester were suspended in 40 ml methanol. 20 ml 2.6 N HCl was added with stirring. The reaction mixture was heated to reflux. After 1 hour a clear solution was obtained. After 3 hours reflux the solution was cooled to room temperature and ethylacetate added. The organic layer was washed with NaOH-solution, two times with water, dried with Na_2SO_4 and concentrated in vacuo. The

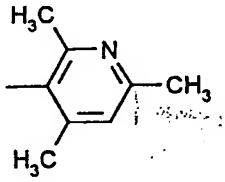
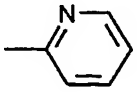
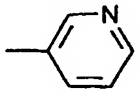
residue was further purified by crystallisation.

Yield: 1.64 g (60%)
R_f : 0.34 (III)

The compounds shown in Table 11 were prepared in analogy to the procedure of example 81:

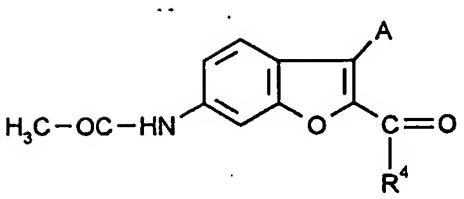
Table 11:

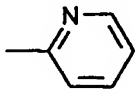
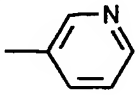
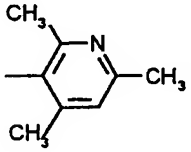


Ex.-No.	R^4	R_f*	Yield (% of theory)
82		0.6 (V)	90
83		0.32 (IV)	50
84		0.4 (IV)	75

The compounds shown in Table 12 were prepared in analogy to the procedure of example 78.

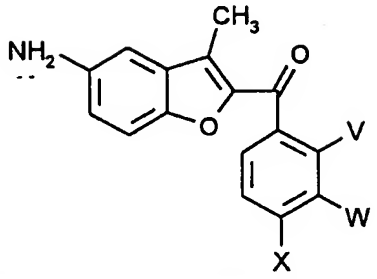
Table 12:



Example No.	A	R^4	R_f*	yield
85	$C_2H_4COOCH_3$		0.25 (IV)	30
86	$C_2H_4COOCH_3$		0.3 (IV)	20
87	CH_3		0.34 (IV)	63

The compounds shown in the Tables 13 and 14 are prepared in analogy to the procedure of 42.

Table 13:



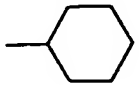
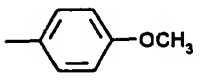
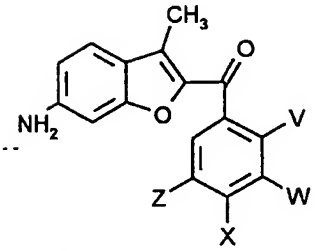
Example No.	V	W	X	R_f*	yield (% of theory
88	H	H	F	0.5 (I)	98
89	H	H	Br	0.5 (III)	97
90	H	H	C_2H_5	0.44 (I)	82
91	H	H		0.5 (I)	82
92	Cl	H	Cl	0.63 (I)	80
93	H	NO_2	H	0.5 (I)	70
94	H	CH_3	H	0.63 (I)	94
95	CH_3	H	CH_3	0.91 (I)	81
96	H	H	NO_2	0.83 (I)	77
97	H	CF_3	H	0.69 (I)	91
98	H	OCH_3	H	0.66 (I)	90
99	H		H	0.42 (I)	94

Table 14



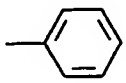
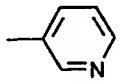
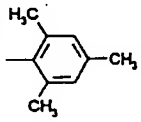
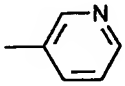
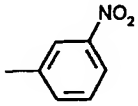
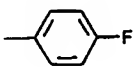
Ex. No.	V	W	X	Z	R_f*	yield (% of theory)
100	H		H	H	0.63 (I)	100
101	H	H	C_9H_{19}	H	0.84 (V)	78
102	H	H	C_6H_{13}	H	0.80 (V)	76
103	H	H		H	0.7 (V)	97
104	H		H	H	0.66 (III)	93
105	H		H	H	0.72 (III)	78
106	H		H	H	0.85 (V)	95
107	H		H	H	0.87 (V)	100

Table 14: (continuation)

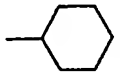
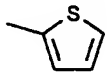
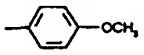
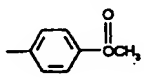
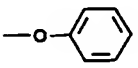
Ex. No.	V	W	X	Z	R_f*	yield (% of theory)
108	H	H	COOH	H		
109	H	H	F	H	0.77 (IV)	77
110	H	H	C_2H_5	H	0.84 (IV)	78
111	H	H		H	0.9 (IV)	65
112	H	H	OCH_3	H	0.371 (I)	92
113	OCH_3	H	OCH_3	H	0.257	88.3
114	H	H	OH	H	0.27 (IV)	43
115	H	H		H	0.85 (IV)	80
116	H	H	NO_2	H	0.79 (I)	88
117	H	H	Br	H	0.78 (I)	58
118	H	H	OCH_3	H	0.75 (I)	93
119	Cl	Cl	H	H	0.79 (I)	40
120	H	H	CH_3	H	0.34 (I)	76
121	H	H	CF_3	H	0.41 (I)	97
122	H		NO_2	H	0.53 (I)	40
123	CH_3	CH_3	H	H	0.98 (I)	91
124	H		H	H	0.53 (I)	19

Table 14: (continuation)

Ex. No.	V	W	X	Z	R_f*	yield (% of theory)
125	H	H		H	0.72 (I)	78

The compounds shown in Tables 15, 16, 17, 18, 19 and 20 are prepared in analogy to the procedure of example 1. Compounds with ethylacetate substituted in position A are prepared by Friedel-Crafts reaction of Example IV with aryl acid chloride.

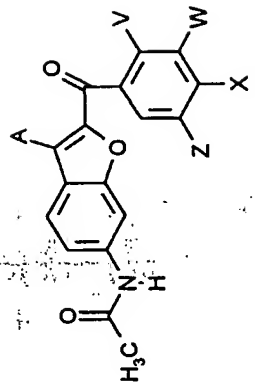


Table 15:

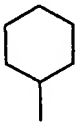
Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
126	H	H	CH_3	H		0.59 (IV)	15
127	H	CN	H	H		0.5 (IV)	76
128	H	H	F	H		0.46 (I)	70
129	H	H		H		0.52 (I)	87

Table 15: (continuation)

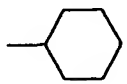
Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
130	H	H		H		0.55 (I)	100
131	H	H	F	H		0.5 (I)	89
132	H	H	NO_2	H	$CH(CH_3)_2$	0.5 (I)	30
133	H	H	CH_3	H	$CH(CH_3)_2$	0.5 (I)	77
134	H	OCH_3	H	H	$CH(CH_3)_2$	0.5 (I)	65
135	Cl	H	Cl	H	$CH(CH_3)_2$	0.53 (I)	68
136	CH_3	H	CH_3	H	$CH(CH_3)_2$	0.53 (I)	86
137	H	H	CF_3	H	$CH(CH_3)_2$	0.53 (I)	63
138	H	H	CH_3	H		0.41 (I)	61
139	H	Br	H	H	OH	0.69 (IV)	25

Table 15: (continuation)

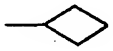
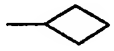
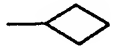
Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
140	H	$-OCH_3$	H	H		0.48 (I)	57
141	H	H	CH_3	H	-OH	0.53 (V)	52
142	H	H	CH_3	H	H	0.21 (I)	59
143	H	$-OCH_3$	H	H	$-C_2H_5$	0.37 (III)	44
144	H	$-OCH_3$	H	H		0.42 (I)	51
145	H	H	CH_3	H	$-OC_2H_5$	0.43 (I)	31
146	H	CF_3	H	H		0.55 (I)	68
147	Cl	H	Cl	H		0.54 (I)	57
148	H	CF_3	H	H		0.41 (I)	65
149	H	Br	H	H		0.44 (I)	72

Table 15: (continuation)

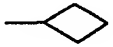
Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
150	Cl	H	Cl	H		0.62 (I)	46
151	H	CH_3	H	H	$-C_2H_5$	0.51 (I)	54
152	H	CH_3	H	H		0.53 (I)	77
153	H	H	Cl	H	CH_2CO_2Et	0.46 (V)	44
154	H	H	OCH_3	H	$CH(CH_3)_2$	0.08 (III)	79
155	$-OCH_3$	H	OCH_3	H	$CH(CH_3)_2$	0.08 (III)	83
156	OCH_3	H	OCH_3	H		0.13 (I)	48.5
157	H	H	OCH_3	H		0.26 (I)	49.1
158	H	H	Br	H		0.28 (I)	13

Table 15: (continuation)

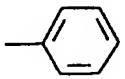
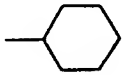
Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
159	H	H		H		0.44 (I)	31
160	H	Br	H	H	C_2H_5	0.3 (III)	27
161	H	H	CN	H	C_2H_5	0.6 (IV)	45
162	H	CN	H	H	C_2H_5	0.6 (IV)	26
163	H	H	C_2H_5	H	C_2H_5	0.67 (IV)	58
164	H	H		H	C_2H_5	0.44 (I)	74
165	H	H	F	H	C_2H_5	0.07 (III)	65
166	H	H	Br	H	$CH(CH_3)_2$	0.3 (I)	67
167	H	Br	H	H	$CH(CH_3)$	0.32 (I)	31
168	H	H	CN	H	$CH(CH_3)$	0.65 (IV)	38
169	H	CN	H	H	$CH(CH_3)_2$	0.63 (IV)	59

Table 15: (continuation)

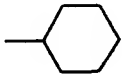
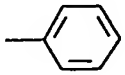
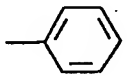
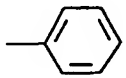
Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
170	H	H	C_2H_5	H	$CH(CH_3)_2$	0.2 (III)	88
171	H	H		H	$CH(CH_3)_2$	0.2 (III)	75
172	H	H	F	H	$CH(CH_3)_2$	0.15 (III)	93
173	H	H		H	$CH(CH_3)_2$	0.4 (I)	86
174	H	H	$-(CH_2)_3CH_3$	H	$-CH_2CO_2C_2H_5$	0.55	68.6
175	H	H		H	$-CH_2CO_2C_2H_5$	0.358	70.6
176	H	H	Br	H	CH_2CH_3	0.133	67
177	H	H		H	CH_2CH_3	0.29	66

Table 15: (continuation)

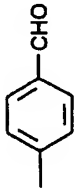
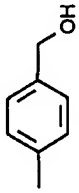
Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
178	H	H		H		0.42	31
179	H	H		H		0.22	28.4
180	H	H		H		0.15	89.2
181	H	H		H		0.32	70.9
182	H	H	OCH_3	H		0.29	58.4
183	OCH_3	H	OCH_3	H		0.29	67.2

Table 15: (continuation)

Example No.	V	W	X	Z	A	R_f*	yield (% of theory)
184	H	H	Br	H		0.38	77.6

Table 16:

Example No.	V	W	X	Z	R_f*	yield (% of theory)
185	Cl	H	Cl	H	0.51 (I)	59
186	H	CH_3	H	H	0.60 (I)	53
187	H	OCH_3	H	H	0.43 (I)	47
188	H	CF_3	H	H	0.53 (I)	42
189	H	NO_2	H	H	0.42 (I)	12
190	H	H	OCH_3	H	0.58	97
191	H	H		H	0.45	68

Table 16: (Continuation)

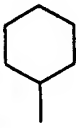
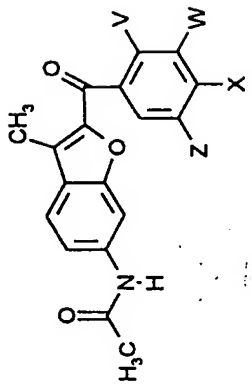
Example No.	V	W	X	Z	R_f*	yield (% of theory)
192	H	H	C_2H_5	H	0.56 (IV)	63
193	H	H	CH_3	H	0.27 (I)	86
194	H	H		H	0.35 (I)	79

Table 17:



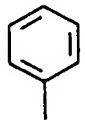
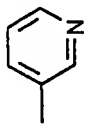
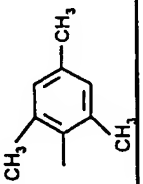
Example No.	V	W	X	Z	R_f*	yield (% of theory)
195	H		H	H	0.39 (I)	65
196	H	H	C_9H_{19}	H	0.06 (III)	57
197	H	H	C_6H_{13}	H	0.42 (V)	35
198	H	H		H	0.66 (V)	67
199	H		H	H	0.48 (V)	83

Table 17: (continuation)

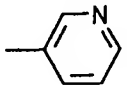
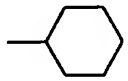
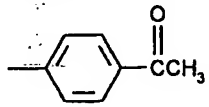
Example No.	V	W	X	Z	R_f*	yield (% of theory)
200	H		H	H	0.68 (V)	97
201	H	H	F	H	0.8 (I)	98
202	H	H	C_2H_5	H	0.5 (IV)	50
203	H	H		H	0.6 (IV)	71
204	H	H	OCH_3	H	0.2 (IV)	63
205	OCH_3	H	OCH_3	H	0.2 (IV)	62
206	CH_3	H	CH_3	H	0.4 (I)	51
207	H	H		H	0.2 (I)	21

Table 17: (continuation)

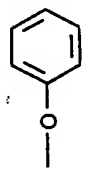
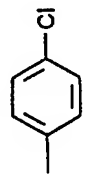
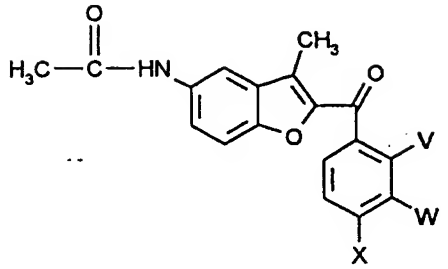
Example No.	V	W	X	Z	R_f*	yield (% of theory)
208	H		H	H	0.32 (I)	68
209	H	H	OH	H	0.14 (I)	20
210	H	H		H	0.2 (IV)	61
211	H	H		H	0.47 (IV)	30
212	H	H	Br	H	0.65	60
213	H	H		H	0.1	76

Table 18:



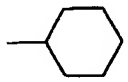
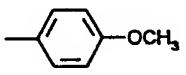
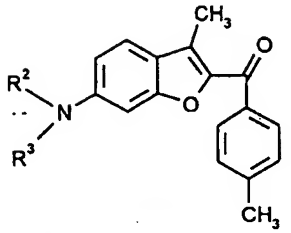
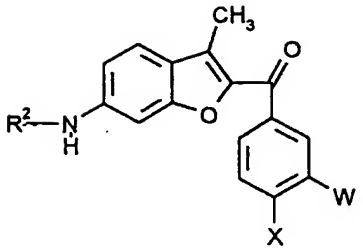
Example No.	V	W	X	R_f*	yield (% of theory)
214	H	H	F	0.5 (IV)	83
215	H	H	Br	0.45 (III)	68
216	H	H	C_2H_5	0.48 (IV)	60
217	H	H		0.54 (IV)	78
218	H	Br	H	0.27 (I)	71
219	Cl	H	Cl	0.26 (I)	65
220	H	NO_2	H	0.15 (I)	20
221	H	CH_3	H	0.25 (I)	73
222	CH_3	H	CH_3	0.36 (I)	57
223	H	H	NO_2	0.19 (I)	16
224	H	CF_3	H	0.35 (I)	37
225	H	OCH_3	H	0.21 (I)	96
226	H	H		0.26 (I)	81

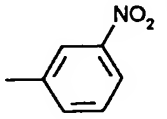
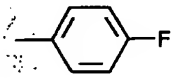
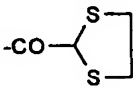
Table 19:



Example No.	R^2	R^3	R_f*	yield (% of theory)
227	$-CH_2CO_2Et$	$-CH_2CO_2Et$	0.21 (III)	79
228	$-CH_2CO_2H$	$-CH_2CO_2H$	0.03 (II)	98
229	H	$-COCH_2OCH_3$	0.6 (II)	85

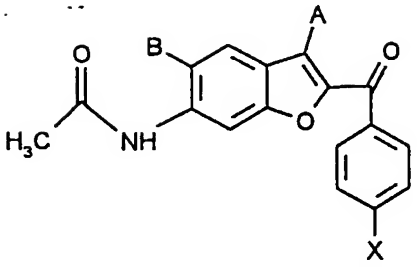
Table 20:



Example No.	R^2	X	W	R_f*	yield (% of theory)
230	$-COCH_2OCH_3$	CH_3	H	0.6 (III)	85
231	$-COCH_3$	H		0.64 (V)	55
232	$-COCH_3$	H		0.75 (V)	31
233	$-SO_2NHC(CH_3)_3$	CH_3	H	0.72 (III)	58
234	$-SO_2NH_2$	CH_3	H	0.64 (III)	70
235	$-COCH_2OCOCH_3$	CH_3	H	0.58 (III)	70
236	$-COCH_2OH$	CH_3	H	0.4 (III)	79
237		CH_3	H		

The compounds shown in Tables 21 to 24 are prepared in analogy to the abovementioned procedures.

Table 21:



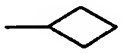
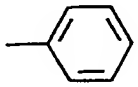
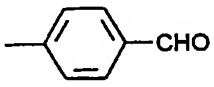
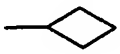
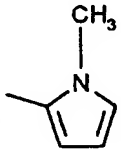
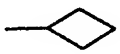
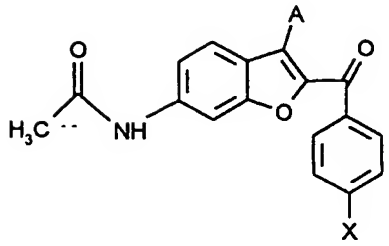
Ex.-No.	B	X	A	R_f*	yield in %
238	H	CH_3		0.46 (IV)	88
239	H	CH_3	$-C_2H_5$	0.35 (IV)	85
240	H	Cl	$-CH_2CO_2Et$	0.91 (IV)	12
241	H		$-C_2H_5$	0.09 (I)	63
242	H		$-CH(CH_3)_2$	0.17 (I)	28.5
243	H	H		0.41 (IV)	91
244	H		$-CH_3$	0.34 (IV)	76
245	H	Cl		0.39 (IV)	57

Table 21: (Continuation)

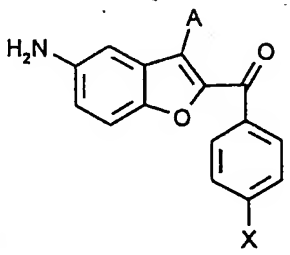
Ex.-No.	B	X	A	R_f*	yield in %
246	H	$-C_2H_5$		0.47 (IV)	73
247	H	Cl	-OH	0.30 (IV)	52
248	H	F	$-CH(CH_3)_2$	0.25 (IV)	93
249	CH_3	CH_3	$-CH_3$	0.28 (I)	53

Table 22:



Ex.-No.	X	A	R_f*	yield
250	CH_3	CH_3	0.43 (IV)	84
251	CN	CH_3	0.20 (IV)	42
252	H	CH_3	0.47 (IV)	14
253	NO_2	CH_3	0.21 (I)	16
254	F	C_2H_5	0.44 (IV)	quant.

Table 23:



Ex.-No.	X	A	R_f*	yield (% of theory)
255	CH_3	CH_3	0.73 (IV)	97
256	H	CH_3	0.85 (IV)	84
257	-CN	CH_3	0.52 (IV)	95

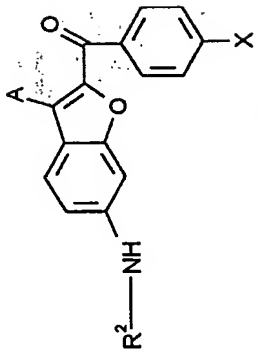


Table 24:

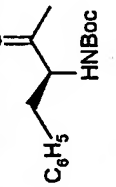
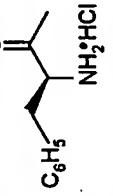
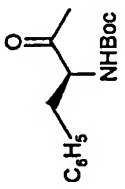
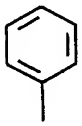
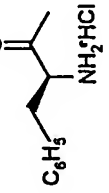
Ex.-No.	R^2	A	X	R_f*	yield (% of theory)
258			Br	0.65 (IX)	73
259			Br	0.68 (X)	53.8

Table 24: (continuation)

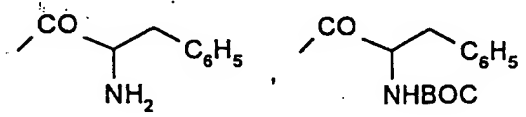
Ex.-No.	R^2	A	X	R_f*	yield (% of theory)
260				0.68 (IX)	67
261				0.66 (X)	86

Claims

1. Amino-benzofuryl- and thienyl-derivatives of the general formula (I) in which

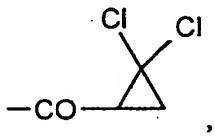
I. :

R^1	represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms or represents halogen, carboxyl, cyano, nitro, trifluoromethyl or a group of a formula $-OR^5$, $-SR^6$ or $-NR^7R^8$,
	in which
R^5, R^6 and R^8	are identical or different and denote hydrogen, cycloalkyl having 3 to 6 carbon atoms, benzyl or a 5 to 7-membered saturated or unsaturated heterocycle having up to 4 heteroatoms from the series comprising N, S and/or O and to which a phenyl ring can be fused and which is optionally substituted by identical or different substituents from the series comprising halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms or denote straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms, or denote phenyl, which is optionally monosubstituted to disubstituted by identical or different substituents from the series comprising nitro, halogen, carboxy or straight-chain or branched alkoxycarbonyl having up to 6 carbon atoms,
	or
R^5	denotes a hydroxyl protecting group, from the series comprising trimethylsilyl, t-butyldimethylsilyl, benzyl, 4-nitrobenzyl, 4-methoxybenzyl, acetyl, tetrahydropyranyl and benzoyl,
R^7	denotes hydrogen or a straight-chain or branched alkyl having up to 4 carbon atoms,
R^2	represents formyl or straight-chain or branched acyl, alkoxy or alkoxycarbonyl each having up to 8 carbon atoms in the alkyl group, or represents benzoyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising halogen, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms in the alkyl group, or represents a group of a formula



,

$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ or a residue of the formula



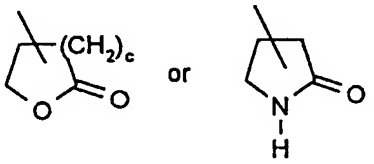
,

	in which
R^9	denotes straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by phenyl, or denotes phenyl, which is optionally substituted by trifluoromethyl, cyano, nitro or straight-chain or branched alkyl having up to 6 carbon atoms,
R^{10} and R^{11}	are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms or phenyl,
R^{12}	denotes straight-chain or branched hydroxyl, oxyacyl, alloxy or alkoxycarbonyl each having up to 6 carbon atoms or carboxy,
a	denotes a number 0, 1, 2 or 3,
b	denotes a number 1, 2 or 3,
R^{13}	denotes straight-chain or branched alkyl having up to 6 carbon atoms,
R^3	represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms, or

has the abovementioned meaning of R^2,

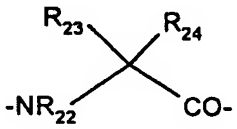
T represents an oxygen or sulfur atom

A represents hydrogen, hydroxyl, cycloalkyl with 3 to 6 carbon atoms, carboxy or straight-chain or branched alkoxycarbonyl or alkoxy each having up to 6 carbon atoms, or straight-chain or branched alkyl or alkenyl each having up to 8 carbon atoms and each of which is optionally monosubstituted by cyano or by a 5 to 7-membered saturated or unsaturated heterocycle having up to 4 heteroatoms from the series comprising N, S and O, which is optionally substituted by identical or different substituents from the series comprising hydroxy, halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms,
or alkyl or alkenyl are optionally substituted by a group of a formula



in which

c denotes a number 1 or 2, and in which both rings are optionally monosubstituted by hydroxy, halogen or by straight-chain or branched alkyl having up to 6 carbon atoms,
or alkyl or alkenyl are optionally monosubstituted by a group of a formula -CO-R^{14}, -CO-$NR^{15}R^{16}$, -CONR^{17}-SO_2-R^{18} or -PO(OR^{19})(OR^{20}), -OR^{21} or



in which

R^{14} denotes hydroxyl, cycloalkyloxy having 3 to 7 carbon atoms or straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms,

R^{15}, R^{16} and R^{17} are identical or different and represent hydrogen, straight-chain or branched alkyl having up to 6 carbon atoms, pheny or benzyl,
or

R^{15} denotes hydrogen,
and

R^{16} denotes hydroxyl,
or

R^{15} and R^{16} together with the nitrogen atom form a 5-or 6-membered saturated heterocycle,

R^{18} denotes a straight-chain or branched alkyl having up to 6 carbon atoms, which is optionally substituted by phenyl or trifluoromethyl,
or
denotes phenyl, which is optionally substituted by substituents from the series comprising halogen, cyano, nitro or by a straight-chain or branched alkyl having up to 6 carbon atoms,

R^{19}, R^{20} and R^{21} are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,

R^{22} denotes hydrogen, an aminoprotecting group or straight-chain or branched alkyl having up to 6 carbon atoms,

R^{23} and R^{24} are identical or different and denote hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms,
or

R^{23} has the abovementioned meaning,
and

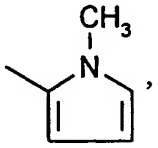
R^{24} denotes cycloalkyl having 3 to 6 carbon atoms or aryl having 6 to 10 carbon atoms or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cyano, methylthio, hydroxy, mercapto, guanidyl or a group of a formula - $NR^{25}R^{26}$ or R^{27}-CO-,
wherein

R^{25} and R^{26} have the meaning shown above for R^{15}, R^{16} and R^{17},

R^{27} denotes hydroxyl, benzyloxycarbonyl, straight-chain or branched alkoxy having up to 6 carbon atoms or the abovementioned group -$NR^{25}R^{26}$,

or alkyl is optionally substituted by cycloalkyl having 3 to 6 carbon atoms, or by aryl having up 6 to 10 carbon atoms, which is optionally substituted by hydroxyl, halogen, nitro, straight-chain or branched alkoxy having up to 8 carbon atoms or by the abovementioned group of the formula -$NR^{25}R^{26}$,
or alkyl is optionally substituted by indolyl or by a 5 to 6 menbered unsaturated heterocycle having up to 4 N-atoms wherein optionally all -NH-functions are protected by straight-chain or branched alkyl having up to 6 carbon atoms or by an amino protecting group,
and

R^4 represents phenyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, adamantyl, phenoxy, cycloalkyl having up 3 to 6 carbon atoms, halogen, nitro, furanyl, thienyl, pyridyl, tetrazolyl, trifluoromethyl, difluoromethyl, cyano, carboxyl, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 11 carbon atoms in the alkyl group or by phenyl, which is optionally monosubstituted to tribsubstituted by nitro, halogen, formyl, carbonyl or straight chain or branched alkoxy, acyl, alkoxycarbonyl or alkyl each having up to 6 carbon atoms, which is optionally substituted by hydroxyl
or phenyl is substituted by a group of formula - $NR^{28}R^{29}$, -SR^{30}, SO_2R^{31}, -O-SO_2R^{32} or



in which

R^{28} and R^{29} have the meaning shown above for R^{10} and R^{11},
or

R^{28} denotes hydrogen,
and

R^{29} denotes straight-chain or branched acyl having up to 6 carbon atoms,

R^{30} denotes straight-chain or branched alkyl having up to 6 carbon atoms,

R^{31} and R^{32} are identical or different and represent straight-chain or branched alkyl having up to 6 carbon atoms, benzyl or phenyl, which are optionally substituted by trifluoromethyl, halogen or straight-chain or branched alkyl having up to 6 carbon atoms,
with the proviso that A does not denote methyl
or

II. : if A represents a methyl group

R^1, T and R^4 have the meaning described in part I,

and in this case

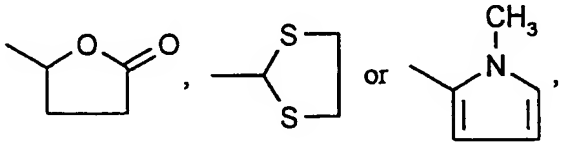
R^2 and R^3 are identical or diffent and represent hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms, or
represent formyl or straight-chain or branched acyl, alkoxy or alkoxycarbonyl each having up to

8 carbon atoms,
or represent benzoyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising halogen, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms,
or represent a group of a formula $-SO_2(NH)_8R^{33}$, SO_2NH_2,
$-CO-(CH_2)_dNR^{34}R^{35}$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ or -CO-X,
in which

R^{33} has the abovementioned meaning of R^9 and is identical or different to the latter,
R^{34} and R^{35} are identical or different and have the abovementioned meaning of R^{10} and R^{11},
R^{36} denotes hydroxyl or straight-chain or branched alkoxy having up to 6 carbon atoms,
R^{37} has the abovementioned meaning of R^{12} or denotes straight-chain or branched alkoxy or oxyacyl each having up to 6 carbon atoms or hydroxyl,
d has the abovementioned meaning of a,
e denotes a number 1, 2, 3, 4 or 5,
f has the abovementioned meaning of b,
g denotes a number 0 or 1,
X denotes a 5-membered saturated or unsaturated heterocycle having up to 3 heteroatoms from the serie comprising N, S and/or O, which is optionally monosubstituted to trisubstituted by nitro, methyl or ethyl,

or

X denotes a residue of the formula



or

III. :

R^1, A and T have the abovementioned meaning described in part I or
A represents methyl,
R^2 and R^3 have the abovementioned meaning described in part II,

and in this case

R^4 represents a 5 to 7 membered, saturated or unsaturated heterocycle, which can contain up to three oxygen, suphur and/or nitrogen atoms as heteroatoms and to which further a benzene ring can be fused and wherein both rings are optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, halogen, nitro, 1H-tetrazolyl, trifluoromethyl, trifluoromethoxy, difluoromethyl, difluoromethoxy, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 8 carbon atoms or by a group of formula $-NR^{38}R^{39}$, $-SR^{40}$, SO_2R^{41} or $-O-SO_2R^{42}$,
in which

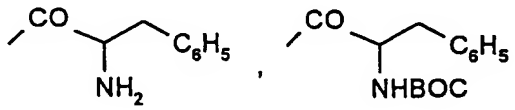
R^{38} and R^{39} have the meaning shown above for R^{28} and R^{29} and are identical to the latter or different from the latter,
R^{40} has the abovementioned meaning of R^{30},
R^{41} and R^{42} are identical or different and have the abovementioned meaning of R^{31} and R^{32},

and salts thereof.

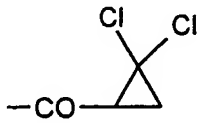
2. Amino-benzofuryl- and thienyl-derivatives of the formula according to claim 1, wherein

I. :

R^1	represents hydrogen, straight-chain or branched alkyl having up to 4 carbon atoms or represents fluorine, chlorine, bromine, nitro, trifluoromethyl or a group of a formula $-OR^5$, $-SR^6$ or $-NR^7R^8$, in which
R^7	denotes hydrogen or a straight-chain or branched alkyl having up to 3 carbon atoms,
R^5, R^6 and R^8	are identical or different and denote hydrogen, cyclopropyl, cyclopentyl, cyclohexyl, chinolyl, pyridyl, imidazolyl, 1,3-thiazolyl or thienyl, which are optionally substituted by identical or different substituents from the series comprising fluorine, chlorine, bromine, iodine, cyano, nitro or by a straight-chain or branched alkyl having up to 5 carbon atoms, or
	denote straight-chain or branched alkyl or alkenyl each having up to 6 carbon atoms, or
	denote phenyl, which is optionally monosubstituted to disubstituted by identical or different substituents from the series comprising nitro, fluorine, chlorine, bromine, iodine, carboxy or straight-chain or branched alkoxycarbonyl having up to 5 carbon atoms,
	or
R^5	denotes benzyl, acetyl or tetrahydropyranyl,
R^2	represents formyl or straight-chain or branched acyl, alkoxy or alkoxycarbonyl each having up to 6 carbon atoms in the alkyl group, or represents benzoyl, which is optionally monosubstituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 4 carbon atoms in the alkyl group,
	or represents a group of a formula



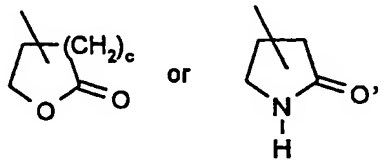
$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ or a residue of the formula



in which

R^9	denotes straight-chain or branched alkyl having up to 4 carbon atoms, which is optionally substituted by phenyl, or
	denotes phenyl, which is optionally substituted by trifluoromethyl, cyano, nitro or straight-chain or branched alkyl having up to 4 carbon atoms,
R^{10} and R^{11}	are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 4 carbon atoms or phenyl,
R^{12}	denotes straight-chain or branched alkoxycarbonyl having up to 4 carbon atoms or carboxy,
a	denotes a number 0, 1, 2 or 3,
b	denotes a number 1, 2 or 3,
R^{13}	denotes straight-chain or branched alkyl having up to 4 carbon atoms,
R^3	represents hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms, or has the abovementioned meaning of R^2,
T	represents an oxygen atom

A represents hydrogen, hydroxyl, cyclopropyl, cyclobutyl, cyclopentyl, carboxyl or straight-chain or a branched alkoxycarbonyl or alkoxy each having up to 4 carbon atoms, or straight-chain or branched alkyl or alkenyl each having up to 6 carbon atoms and each of which is optionally monosubstituted by cyano, tetrazolyl, oxazolyl, oxazolinyl, thiazolyl or a group of a formula



in which

c denotes a number 1 or 2

and in which all rings are optionally monosubstituted by hydroxy, fluorine, bromine, chlorine or by straight-chain or branched alkyl having up to 4 carbon atoms,

or alkyl or alkenyl are optionally monosubstituted by a group of a formula -CO-R^{14}, -CO-$NR^{15}R^{16}$ or -OR^{21},

in which

R^{14} denotes hydroxyl, cyclopropyloxy, cyclopentyloxy, cyclohexyloxy or straight-chain or branched alkyl or alkoxy each having up to 6 carbon atoms,

R^{15} and R^{16} are identical or different and represent hydrogen, straight-chain or branched alkyl having up to 4 carbon atoms, phenyl or benzyl,

or

R^{15} denotes hydrogen,

and

R^{16} denotes hydroxyl,

or

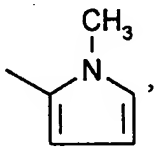
R^{15} and R^{16} together with the nitrogen atom form a pyrrolidinyl, morpholinyl or a piperidinyl ring,

R^{21} represents hydrogen or straight-chain or branched alkyl having up to 6 carbon atoms,

and

R^4 represents phenyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, adamantyl, phenoxy, cyclopropyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine, iodine, nitro, tetrazolyl, furanyl, thienyl, pyridyl, trifluoromethyl, difluoromethyl, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 10 carbon atoms in the alkyl group, or by phenyl, which is optionally monosubstituted to tribsubstituted by fluorine, chlorine, bromine, nitro, formyl or straight-chain or branched alkoxy, acyl, ethoxycarbonyl or alkyl each having up to 4 carbon atoms, which is optionally substituted by hydroxyl, or

phenyl is substituted by a group of formula - $NR^{28}R^{29}$, -SR^{30}, -SO_2R^{31}, -O-SO_2R^{32} or



in which

R^{28} and R^{29} have the meaning shown above for R^{10} and R^{11},

or

R^{28} denotes hydrogen,

and

R^{29} denotes straight-chain or branched acyl having up to 6 carbon atoms,

R^{30} denotes straight-chain or branched alkyl having up to 4 carbon atoms,

R^{31} and R^{32} are identical or different and represent straight-chain or branched alkyl having up to 5 carbon atoms or phenyl, which is optionally substituted by trifluoromethyl, fluorine, chlorine, bromine

or straight-chain or branched alkyl having up to 3 carbon atoms,

with the proviso that A does not denote methyl,

or

II.:

if A represents a methyl group

R^1, T and R^4 have the abovementioned meaning described in part I,

and in this case

R^2 and R^3 are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms, or represent formyl or straight-chain or branched acyl, or alkoxycarbonyl each having up to 4 carbon atoms, or represent benzoyl, which is optionally substituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, carboxy, straight-chain or branched alkoxy, alkoxycarbonyl or acyl each having up to 4 carbon atoms, or represent a group of a formula $-SO_2-(NH)_g-R^{33}$, SO_2NH_2, $-CO-(CH_2)_d-NR^{34}R^{35}$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ or CO-X,

in which

R^{33} has the abovementioned meaning of R^9 and is identical or different to the latter,

R^{34} and R^{35} are identical or different and denote hydrogen or methyl,

R^{36} denotes hydroxyl or straight-chain or branched alkoxy having up to 4 carbon atoms or carboxy,

R^{37} has the abovementioned meaning of R^{12} or denotes hydroxyl or straight-chain or branched alkoxy or oxacyl each having up to 4 carbon atoms,

d has the abovementioned meaning of a,

e denotes a number 1, 2, 3 or 4,

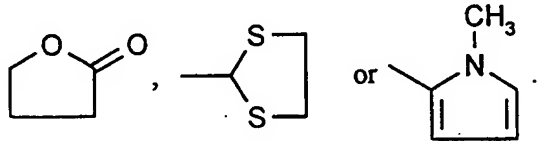
f has the abovementioned meaning of c,

g denotes a number 0 or 1,

X denotes pyrrolyl, furyl or isoxazolyl, which are optionally monosubstituted to trisubstituted by nitro, methyl or ethyl

or

X denotes a residue of the formula



or

III.:

R^1, A and T have the meaning described in part I,

or

A represents methyl,

R^2 and R^3 have the meaning described in part II and in this case

R^4 represents pyridyl, imidazolyl, pyrazolyl, thienyl, isothiazolyl, 1,3-thiazolyl or benzo[b]thiophenyl, where all rings are optionally monosubstituted to trisubstituted by identical or different sub-

stituents from the series comprising hydroxyl, fluorine, chlorine, bromine, iodine, nitro, 1H-tetrazolyl, trifluoromethyl, trifluoromethoxy, difluoromethyl, difluoromethoxy, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 6 carbon atoms or by a group of formula $-NR^{38}R^{39}$, $-SR^{40}$, $-SO_2R^{41}$ or $-O-SO_2R^{42}$,

in which

R^{38} and R^{39} have the meaning shown above for R^{28} and R^{29} and are identical to the latter or different from the latter,

R^{40} has the abovementioned meaning of R^{30},

R^{41} and R^{42} are identical or different and have the abovementioned meaning of R^{31} and R^{32},

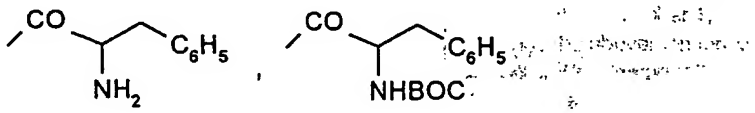
and salts thereof.

3. Amino-benzofuryl- and thienyl-derivatives of formula (I) according to claim 1, wherein

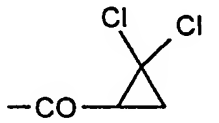
I.:

R^1 represents hydrogen, straight-chain or branched alkyl having up to 3 carbon atoms, fluorine, chlorine, bromine, nitro or trifluoromethyl,

R^2 represents formyl or straight-chain or branched acyl, or alkoxycarbonyl each having up to 5 carbon atoms in the alkyl group,
or represents benzoyl, which is optionally substituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, carboxy, straight-chain
or branched alkoxy, alkoxycarbonyl or acyl, each having up to 3 carbon atoms in the alkyl group,
or represents a group of a formula



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ or a residue of the formula



in which

R^9 denotes straight-chain or branched alkyl having up to 4 carbon atoms, which is optionally substituted by phenyl, or
denotes phenyl, which is optionally substituted by trifluoromethyl, cyano or straight-chain or branched alkyl having up to 3 carbon atoms,

R^{10} and R^{11} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 3 carbon atoms or phenyl,

R^{12} denotes straight-chain or branched alkoxycarbonyl having up to 3 carbon atoms or carboxy,

a denotes a number 0, 1, 2 or 3,

b denotes a number 1, 2 or 3,

R^{13} denotes straight-chain or branched alkyl having up to 3 carbon atoms,

R^3 represents hydrogen or straight-chain or branched alkyl having up to 3 carbon atoms, or has the abovementioned meaning of R^2,

T represents an oxygen or sulfur atom,

A represents hydrogen, hydroxyl, cyclopropyl, cyclobutyl, cyclopentyl, carboxyl, or straight-chain

or a branched alkoxycarbonyl or alkoxy each having up to 3 carbon atoms, or straight-chain or branched alkyl having up to 5 carbon atoms which is optionally monosubstituted by cyano or by a group of a formula -CO-R^{14}, -CO-$NR^{15}R^{16}$,
in which

R^{14} denotes hydroxyl, cyclopropyloxy, cyclopentyloxy, cyclohexyloxy or straight-chain or branched alkyl or alkoxy having up to 5 carbon atoms,

R^{15} and R^{16} are identical or different and denote hydrogen, straight-chain or branched alkyl having up to 3 carbon atoms or phenyl,

and

R^4 represents phenyl, which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, adamantyl, phenoxy, N-methyl-pyrrolyl, cyclopropyl, cyclopentyl, cyclohexyl, fluorine, chlorine, bromine, furanyl, thienyl, pyridyl, nitro, trifluoromethyl, difluoromethyl, cyano, carboxyl, methylthio, straight-chain or branched alkyl, alkoxy, acyl or alkoxycarbonyl each having up to 9 carbon atoms, or
by phenyl, which is optionally monosubstituted to trisubstituted by fluorine, chlorine, bromine, nitro, formyl or straight-chain or branched alkoxy, alkoxycarbonyl, acyl or alkyl each having up to 4 carbon atoms, which is optionally substituted by hydroxyl,

with the proviso that A does not denote methyl,
or
II.:
if A represents a methyl group,

R^1, T and R^4 have the meaning described in part I,

and in this case

R^2 and R^3 are identical or different and represent hydrogen or straight-chain or branched alkyl having up to 3 carbon atoms, or
represent formyl or straight-chain or branched acyl or alkoxycarbonyl each having up to 4 carbon atoms,
or represent benzoyl, which is optionally substituted by substituents from the series comprising fluorine, chlorine, bromine, cyano, straight-chain or branched alkoxy or alkoxycarbonyl each having up to 3 carbon atoms,
or represent a group of a formula -CO-NH_2, - $SO_2(NH)_9R^{37}$, -SO_2NH_2, -$(CH_2)_e$-CO-R^{36}, -CO-$(CH_2)_f$-R^{37} or -CO-X,
in which

R^{33} has the abovementioned meaning of R^9 and is identical or different to the latter,

R^{34} and R^{35} are identical or different and denote hydrogen or methyl,

R^{37} has the abovementioned meaning of R^{12} or denotes hydroxyl or straight-chain or branched alkoxy or oxacyl each having up to 4 carbon atoms,

R^{36} denotes hydroxyl or straight-chain or branched alkoxy having up to 3 carbon atoms,

d has the abovementioned meaning of a,

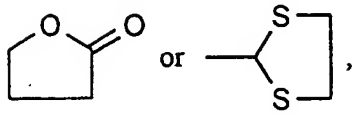
e denotes a number 1, 2, 3 or 4,

f has the abovementioned meaning of b,

g denotes a number 0 or 1,

X denotes pyrrolyl, N-methyl-pyrrolyl, furyl or isoxacolyl, which are optionally monosubstituted to trisubstituted by nitro, methyl or ethyl,
or

X denotes a residue of the formula



b denotes a number 1 or 2,

or

III.:

R^1, A and T have the abovementioned meaning described in part I,

or

A represents methyl,

R^2 and R^3 have the meaning described in part II,

and in this case

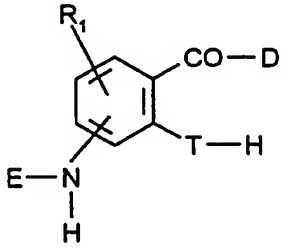
R^4 represents pyridyl, which optionally is up to substituted to trisubstituted by identical or different substituents from the series comprising hydroxyl, fluorine, chlorine, bromine, nitro, trifluoromethyl, trifluoromethoxy, difluoromethyl, difluoromethoxy, cyano, carboxy, straight-chain or branched alkyl, alkoxy, alkoxycarbonyl or acyl each having up to 5 carbon atoms,

and salts thereof.

4. Amino-benzofuryl- and thienyl-derivatives according to claim 1 to 3 for therapeutic use.

5. A process for the preparation of amino-benzofuryl- and thienyl-derivatives according to claims 1 to 3, characterized in that

[A] compounds of the general formula (II)



(II)

in which

R^1 and T have the abovementioned meaning,

and

E denotes straight-chain or branched acyl having up to 4 carbon atoms, preferably acetyl,

and

D represents -$(CH_2)_2$-$(C_1$-$C_4)$-alkoxycarbonyl,

by reaction with compounds of the formula (III)

$$R_4—CO—CH_2—L \qquad (III)$$

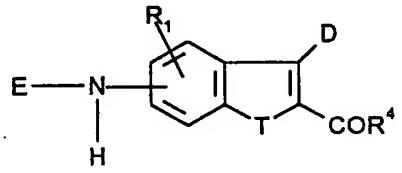
in which

R^4 has the abovementioned meaning

and

L represents a leaving group such as chlorine, bromine, tosylate or mesylate,

in inert solvents in the presence of a base,
firstly are converted into compounds of the general formula (Ia)



(Ia)

in which

R^1, T, D and E have the abovementioned meaning,

and then the compounds (Ia)
are reacted with compounds of the formula (IV) or (IVa)

$$R^2\text{-}L' \qquad (IV)$$

$$R^3\text{-}L' \qquad (IVc)$$

in which

R^2 and R^3 have the abovementioned meaning,

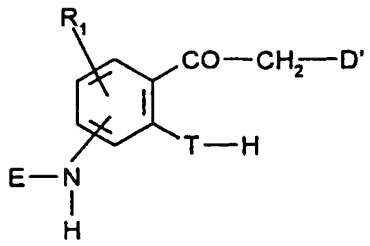
and

L' has the abovementioned meaning of L and is identical or different to the latter,

in inert solvents, if appropriate, in the presence of a base,
and in the case of other radicals mentioned for the meaning of substituent A
D is varied, if appropriate, by splitting off protecting groups, alkylation and/or hydrolysis, or

[B] and in the case of A = CH_2-CO-R^{14}

first compounds of the general formula (IIa)



(IIa)

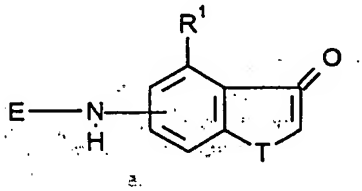
in which

E, T and R^1 have the abovementioned meaning

and

D' denotes halogen, preferably chlorine,

are converted in the presence of NaAc and an alcohol, preferably ethanol, to compounds of the general formula (V)

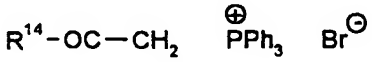


(V)

in which

R^1, E and T have the abovementioned meaning,

then are reacted with compounds of the general formula (VI)

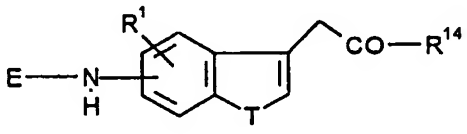


(VI)

in which

R^{14} has the abovementioned meaning

to compounds of the general formula (VII)



(VII)

in which

E, R^1, T and R^{14} have the abovementioned meaning,

in inert solvents,
and in a last step are reacted with compounds of the general formula (VIII)

$$R^4\text{-CO-L'} \qquad \text{(VIII)}$$

in which

R^4 and L' has the abovementioned meaning,

in the presence of '$SnCl_4$,
and
optionally followed by reacting with compounds of the general formulae (IV) or (IVa).

6. A composition consisting of at least one of the amino-benzofuryl- or thienyl-derivatives according to claim 1 to 3 and a pharmacologically acceptable diluent.

7. A composition according to claim 6 for the treatment of acute and chronic inflammatory processes.

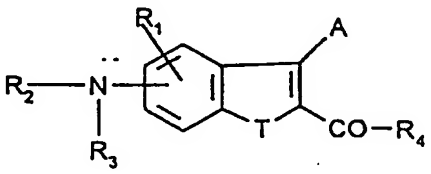
8. Process for the preparation of compositions according to claim 6 and 7 characterized in that the amino-benzofuryl- or thienyl-derivative and the pharmacological acceptable diluent are brought into an formulation suitable for administration.

9. Use of amino-benzofuryl- and thienyl-derivatives according to claim 1 to 3 for the preparation of medicaments.

10. Use according to claim 9 for the preparation of medicaments for the treatment of acute and chronic inflammatory processes.

Patentansprüche

1. Aminobenzofuryl- und -thienylderivate der allgemeinen Formel (I):



(I)

worin gilt:

I.:

R^1 stellt Wasserstoff oder einen geradkettigen oder verzweigten Alkylrest mit bis zu 4 Kohlenstoffatomen oder Halogen, eine Carboxyl-, Cyano-, Nitro-, Trifluormethyl- oder eine Gruppe der Formel $-OR^5$, $-SR^6$ oder $-NR^7R^8$ dar,
worin gilt:

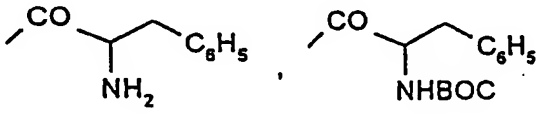
R^5, R^6 und R^8 sind gleich oder verschieden und bedeuten Wasserstoff, einen Cycloalkylrest mit 3 bis 6 Kohlenstoffatomen, einen Benzylrest oder einen 5- bis 7-gliedrigen gesättigten oder ungesättigten Heterozyklus mit bis zu 4 Heteroatomen aus den Reihen aus N, S und/oder O, woran ein Phenylring kondensiert sein kann, und welcher gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den

Reihen aus Halogen, einer Cyano- und aus einer Nitrogruppe oder mit einem geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen substituiert ist, oder
einen geradkettigen oder verzweigten Alkyl- oder Alkenylrest mit jeweils bis zu 8 Kohlenstoffatomen oder einen Phenylrest, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einer Nitrogruppe, Halogen, einer Carboxygruppe oder aus einem geradkettigen oder verzweigten Alkoxycarbonylrest mit bis zu 6 Kohlenstoffatomen mono- bis disubstituiert ist,
oder

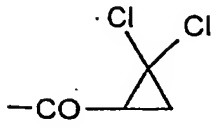
R^5 bedeutet eine Hydroxy-Schutzgruppe aus den Reihen aus: Trimethylsilyl, t-Butyldimethylsilyl, Benzyl, 4-Nitrobenzyl, 4-Methoxybenzyl, Acetyl, Tetrahydropyranyl und aus Benzoyl,

R^7 bedeutet Wasserstoff oder einen geradkettigen oder verzweigten Alkylrest mit bis zu 4 Kohlenstoffatomen,

R^2 stellt eine Formylgruppe oder einen geradkettigen oder verzweigten Acyl-, Alkoxy- oder einen Alkoxycarbonylrest mit jeweils bis zu 8 Kohlenstoffatomen in der Alkylgruppe
oder einen Benzoylrest, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus Halogen, einem Cyano-, Carboxy-, geradkettigem oder verzweigten Alkoxy-, Alkoxycarbonyl- oder aus einem Acylrest mit jeweils bis zu 6 Kohlenstoffatomen in der Alkylgruppe mono- bis trisubstituiert ist,
oder eine Gruppe der Formeln:



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$
oder einen Rest der Formel:



dar, worin gilt:

R^9 bedeutet einen geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen, der gegebenenfalls mit einem Phenylrest substituiert ist, oder einen Phenylrest, der gegebenenfalls mit einer Trifluormethyl-, Cyano-, Nitrogruppe oder mit einem geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen substituiert ist,

R^{10} und R^{11} sind gleich oder verschieden und bedeuten Wasserstoff, einen geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen oder einen Phenylrest,

R^{12} bedeutet einen geradkettigen oder verzweigten Hydroxyl-, Oxyacyl-, Alkoxy- oder einen Alkoxycarbonylrest mit jeweils bis zu 6 Kohlenstoffatomen oder eine Carboxygruppe,

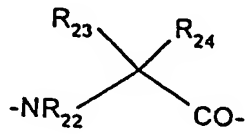
a bedeutet die Zahl 0, 1, 2 oder 3,

b bedeutet die Zahl 1, 2 oder 3,

R^{13} bedeutet einen geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen,
R^3 stellt Wasserstoff oder einen geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen

dar oder hat die oben angegebene Bedeutung von R^2,
T stellt ein Sauerstoff- oder Schwefelatom dar,
A stellt Wasserstoff, eine Hydroxylgruppe, einen Cycloalkylrest mit 3 bis 6 Kohlenstoffatomen, eine Carboxy- oder geradkettige oder verzweigte Alkoxycarbonyl- oder Alkoxygruppe mit jeweils bis zu 6 Kohlenstoffatomen oder einen geradkettigen oder verzweigten Alkyl- oder Alkenylrest mit jeweils bis zu 8 Kohlenstoffatomen dar, der jeweils gegebenenfalls mit einer Cyanogruppe oder mit einem 5- bis 7-gliedrigen gesättigten oder ungesättigten Heterozyklus mit bis zu 4 Heteroatomen aus den Reihen aus N, S und O monosubstituiert ist, welcher wiederum gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einer Hydroxygruppe, Halogen, einer Cyano-, Nitro- oder einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 6 Kohlenstoffatomen substituiert ist,
oder die Alkyl- oder Alkenylreste sind gegebenenfalls mit einer Gruppe der Formel substituiert:

worin c die Zahl 1 oder 2 bedeutet,
und worin beide Ringe gegebenenfalls mit einer Hydroxygruppe, Halogen oder einem geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen monosubstituiert ist,
oder die Alkyl- oder Alkenylreste sind gegebenenfalls mit einer Gruppe der Formeln -CO-R^{14}, -CO-$NR^{15}R^{16}$, -$CONR^{17}$-SO_2-R^{18} oder -$PO(OR^{19})(OR^{20})$, -OR^{21} oder



monosubstituiert ist,
worin gilt:

R^{14} bedeutet eine Hydroxylgruppe, einen Cycloalkyloxyrest mit 3 bis 7 Kohlenstoffatomen oder eine geradkettige oder verzweigte Alkyl- oder Alkoxygruppe mit jeweils bis zu 8 Kohlenstoffatomen,

R^{15}, R^{16} und R^{17} sind gleich oder verschieden und stellen Wasserstoff, eine geradkettige oder verzweigte Alkylgruppe mit bis zu 6 Kohlenstoffatomen, einen Phenyl- oder Benzylrest dar,
oder

R^{15} bedeutet Wasserstoff,
und

R^{16} bedeutet eine Hydroxylgruppe,
oder

R^{15} und R^{16} bilden zusammen mit dem Stickstoffatom einen 5-bis 6-gliedrigen gesättigten Heterozyklus,

R^{18} bedeutet eine geradkettige oder verzweigte Alkylgruppe mit bis zu 6 Kohlenstoffatomen, die gegebenenfalls mit einem Phenyl- oder Trifluormethylrest substituiert ist,
oder
einen Phenylrest, der gegebenenfalls mit Substituenten aus den Reihen aus Halogen, einer Cyano-, Nitro- oder einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 6 Kohlenstoffatomen substituiert ist,

R^{19}, R^{20} und R^{21} sind gleich oder verschieden und stellen Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 6 Kohlenstoffatomen dar,

R^{22} bedeutet Wasserstoff, eine Amino-Schutzgruppe oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 6 Kohlenstoffatomen,

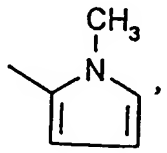
R^{23} und R^{24} sind gleich oder verschieden und bedeuten Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen,
oder

R^{23} hat die oben angegebene Bedeutung,
und

R^{24} bedeutet einen Cycloalkylrest mit 3 bis 6 Kohlenstoffatomen oder einen Arylrest mit 6 bis 10 Kohlensotffatomen oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 8 Kohlenstoffatomen, die gegebenenfalls mit einer Cyano-, Methylthio-, Hydroxy-, Mercapto-, Guanidyl- oder einer Gruppe der Formel -$NR^{25}R^{26}$ oder R^{27}-CO- substituiert ist,
worin gilt:

R^{25} und R^{26} haben die oben für R^{15}, R^{16} und R^{17} angegebene Bedeutung,

R^{27} bedeutet eine Hydroxyl-, Benzyloxycarbonyl-, geradkettige oder verzweigte Alkoxygruppe mit bis zu 6 Kohlensotffatomen oder die oben angegebene Gruppe -$NR^{25}R^{26}$,
oder der Alkylrest ist gegebenenfalls mit einem Cycloalkylrest mit 3 bis 6 Kohlenstoffatomen oder mit einem Arylrest mit 6 bis 10 Kohlenstoffatomen substituiert, welcher gegebenenfalls mit einer Hydroxygruppe, Halogen, einer Nitro-, geradkettigen oder verzweigten Alkoxygruppe mit bis zu 8 Kohlenstoffatome oder mit der oben angegebenen Gruppe der Formel -$NR^{25}R^{26}$ substituiert ist,
oder der Alkylrest ist gegebenenfalls mit einem Indolylrest oder mit einem 5- bis 6-gliedrigen ungesättigten Heterozyklus mit bis zu 4 N-Atomen substituiert, worin gegebenenfalls alle -NH-Funktionen mit einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 6 Kohlenstoffatomen oder mit einer Amino-Schutzgruppe geschützt sind,
und
R^4 stellt einen Phenylrest dar, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einem Hydroxyl-, Adamantyl-, Phenoxy-, Cycloalkylrest mit 3 bis 6 Kohlensotffatomen, aus Halogen, einer Nitro-, Furanyl-, Thienyl-, Pyridyl-, Tetrazolyl-, Trifluormethyl-, Difluormethyl-, Cyano-, Carboxyl-, geradkettigen oder verzweigten Alkyl-, Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 11 Kohlenstoffatomen in der Alkylgruppe oder mit einem Phenylrest mono- bis trisubstituiert ist, welcher gegebenenfalls mit einer Nitrogruppe, Halogen, einer Formyl-, Carbonyl- oder einer geradkettigen oder verzweigten Alkoxy-, Acyl-, Alkoxycarbonyl- oder einer Alkylgruppe mit jeweils bis zu 6 Kohlenstoffatomen mono- bis trisubstituiert ist, welche gegebenenfalls mit einer Hydroxylgruppe substituiert ist,
oder der Phenylrest ist mit einer Gruppe der formeln - $NR^{28}R^{29}$, -SR^{30}, -SO_2R^{31}, -O-SO_2R^{32}
oder



substituiert,
worin gilt:

R^{28} und R^{29} haben die oben für R^{10} und R^{11} angegebene Bedeutung,
oder

R^{28} bedeutet Wasserstoff,

und

R^{29} bedeutet einen geradkettigen oder verzweigten Acylrest mit bis zu 6 Kohlenstoffatomen

R^{30} bedeutet einen geradkettigen oder verzweigten Alkylrest mit bis zu 6 Kohlenstoffatomen,

R^{31} und R^{32} sind gleich oder verschieden und stellen eine geradkettige oder verzweigte Alkylgruppe mit bis zu 6 Kohlenstoffatomen, einen Benzyl- oder Phenylrest dar, die gegebenenfalls mit einer Trifluormethylgruppe, Halogen oder mit einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 6 Kohlenstoffatomen substituiert sind,
mit der Maßgabe, daß A keine Methylgruppe bedeutet,
oder

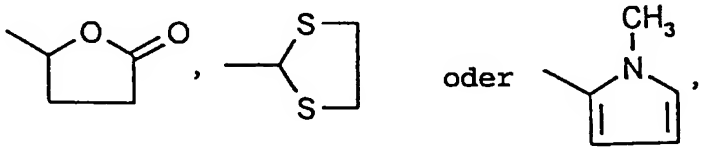
II.:
falls A eine Methylgruppe darstellt,
h
aben R^1, T und R^4 die in Teil I beschriebene Bedeutung
und in diesem Fall gilt:
R^2 und R^3 sind gleich oder verschieden und stellen Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 6 Kohlenstoffatomen oder
eine Formyl- oder geradkettige oder verzweigte Acyl-, Alkoxy- oder eine Alkoxycarbonylgruppe mit jeweils bis zu 8 Kohlenstoffatomen,
oder einen Benzoylrest, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus Halogen, einer Cyano-, Carboxy-, geradkettigen oder verzweigten Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 6 Kohlenstoffatomen
oder eine Gruppe der Formeln $-SO_2(NH)_gR^{33}$, $-SO_2NH_2$, $-CO-(CH_2)_dNR^{34}R^{35}$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ oder -CO-X dar,
worin gilt:

R^{33} hat die oben angegebene Bedeutung von R^9 und ist identisch damit oder verschieden davon,

R^{34} und R^{35} sind gleich oder verschieden und haben die oben angegebene Bedeutung von R^{10} und R^{11},

R^{36} bedeutet eine Hydroxyl- oder eine geradkettige oder verzweigte Alkoxygruppe mit bis zu 6 Kohlenstoffatomen,

R^{37} hat die oben angegebene Bedeutung von R^{12} oder bedeutet eine geradkettige oder verzweigte Alkoxy- oder Oxyacylgruppe mit jeweils bis zu 6 Kohlenstoffatomen oder eine Hydroxylgruppe,
d hat die oben angegebene Bedeutung von a,
e bedeutet die Zahl 1, 2, 3, 4 oder 5,
f hat die oben angegebene Bedeutung von b,
g bedeutet die Zahl 0 oder 1,
X bedeutet einen 5-gliedrigen gesättigten oder ungesättigten Heterozyklus mit bis zu 3 Heteroatomen aus den Reihen aus N, S und/oder O, der gegebenenfalls mit einer Nitro-, Methyl- oder einer Ethylgruppe mono- bis trisubstituiert ist, oder
X bedeutet einen Rest der Formeln:



oder

III.:

R^1, A und T haben die in Teil I beschriebene Bedeutung,
oder
A stellt eine Methylgruppe dar,
R^2 und R^3 haben die in Teil II beschriebene Bedeutung,
und in diesem Fall gilt:
R^4 stellt einen 5- bis 7-gliedrigen gesättigten oder ungesättigten Heterozyklus dar, der bis zu 3 Sauerstoff-, Schwefel- und/oder Stickstoffatome als Heteroatome enthalten kann, woran ferner ein Benzolring kondensiert sein kann, und worin beide Ringe gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einer Hydroxylgruppe, Halogen, einer Nitro-, 1H-Tetrazolyl-, Trifluormethyl-, Trifluormethoxy-, Difluormethyl-, Difluormethoxy-, Cyano-, Carboxy-, geradkettigen oder verzweigten Alkyl-, Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 8 Kohlenstoffatomen oder mit einer Gruppe der Formeln $-NR^{38}R^{39}$, $-SR^{40}$, $-SO_2R^{41}$ oder $-O-SO_2R^{42}$ mono- bis trisubstituiert sind,
worin gilt:

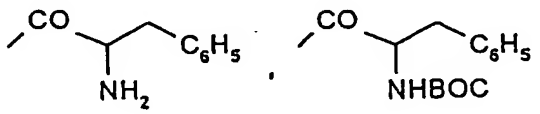
R^{38} und R^{39} haben die oben für R^{28} und R^{29} angegebene Bedeutung und sind mit den letzteren identisch oder davon verschieden,

R^{40} hat die oben angegebene Bedeutung von R^{30},

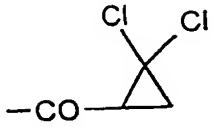
R^{41} und R^{42} sind gleich oder verschieden und haben die oben angegebene Bedeutung von R^{31} und R^{32},
und Salze davon.

2. Aminobenzofuryl- und -thienylderivate der Formel gemäß Anspruch 1,
worin gilt:

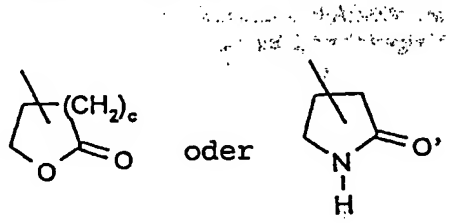
I.:
R^1 stellt Wasserstoff, eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen oder Fluor, Chlor, Brom, eine Nitro-, Tri- fluormethyl- oder eine Gruppe der Formeln $-OR^5$, $-SR^6$ oder $-NR^7R^8$ dar,
worin gilt:
R^7 bedeutet Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 3 Kohlenstoffatomen,
R^5, R^6 und R^8 sind gleich oder verschieden und bedeuten Wasserstoff, Cyclopropyl, Cyclopentyl, Cyclohexyl, Chinolyl, Pyridyl, Imidazolyl, 1,3-Thiazolyl oder Thienyl, welche gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus Fluor, Chlor, Brom, Jod, einer Cyano- und aus einer Nitrogruppe oder mit einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 5 Kohlenstoffatomen substituiert sind, oder
eine geradkettige oder verzweigte Alkyl- oder Alkenylgruppe mit jeweils bis zu 6 Kohlenstoffatomen oder einen Phenylrest, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einer Nitrogruppe, Fluor, Chlor, Brom, Jod, einer Carboxy- oder aus einer geradkettigen oder verzweigten Alkoxycarbonylgruppe mit bis zu 5 Kohlenstoffatomen mono- bis disubstituiert ist,
oder
R^5 bedeutet eine Benzyl-, Acetyl- oder eine Tetrahydropyranylgruppe,
R^2 stellt eine Formylgruppe oder eine geradkettige oder verzweigte Acyl-, Alkoxy- oder Alkoxycarbonylgruppe mit jeweils bis zu 6 Kohlenstoffatomen in der Alkylgruppe
oder eine Benzoylgruppe, die gegebenenfalls mit Substituenten aus der Reihe aus Fluor, Chlor, Brom, einer Cyano-, Carboxy-, geradkettigen oder verzweigten Alkoxy-, Alkoxycarbonyl- oder einer Acylgruppe mit jeweils bis zu 4 Kohlenstoffatomen in der Alkylgruppe monosubstituiert ist,
oder eine Gruppe der Formeln:



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$,
$-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ oder einen Rest der Formel

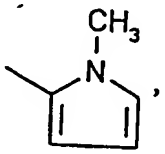


dar,
worin gilt:
R^9 bedeutet eine geradkettige oder verzweigte alkylgruppe mit bis zu 4 Kohlenstoffatomen, die gegebenenfalls mit einem Phenylrest substituiert ist, oder
einen Phenylrest, der gegebenenfalls mit einer Trifluormethyl-, Cyano-, Nitro- oder mit einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 4 Kohlenstoffatomen substituiert ist,
R^{10} und R^{11} sind gleich oder verschieden und bedeuten Wasserstoff, eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen oder einen Phenylrest,
R^{12} bedeutet eine geradkettige oder verzweigte Alkoxycarbonylgruppe mit bis zu 4 Kohlenstoffatomen oder eine Carboxygruppe,
a bedeutet die Zahl 0, 1, 2 oder 3,
b bedeutet die Zahl 1, 2 oder 3,
R^{13} bedeutet eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen,
R^3 stellt Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen dar oder hat die oben angegebene Bedeutung von R^2,
T stellt ein Sauerstoffatom dar,
A stellt Wasserstoff, eine Hydroxyl-, Cyclopropyl-, Cyclobutyl-, Cyclopentyl-, Carboxyl- oder eine geradkettige oder verzweigte Alkoxycarbonyl- oder Alkoxygruppe mit jeweils bis zu 4 Kohlenstoffatomen oder eine geradkettige oder verzweigte Alkyl- oder Alkenylgruppe mit jeweils bis zu 6 Kohlenstoffatomen dar, die jeweils gegebenenfalls mit einer Cyano-, Tetrazolyl-, Oxazolyl-, Oxazolinyl-, Thiazolyl- oder mit einer Gruppe der Formel



monosubstituiert ist,
worin gilt:
c bedeutet die Zahl 1 oder 2,
und worin alle Ringe gegebenenfalls mit einer Hydroxygruppe, Fluor, Brom, Chlor oder mit einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 4 Kohlenstoffatomen monosubstituiert sind,
oder die Alkyl- oder Alkenylgruppen sind gegebenenfalls mit einer Gruppe der Formeln -CO-R^{14}, -CO-$NR^{15}R^{16}$ oder -OR^{21} monosubstituiert,
worin gilt:
R^{14} bedeutet eine Hydroxyl-, Cyclopropyloxy-, Cyclopentyloxy-, Cyclohexyloxy- oder eine geradkettige oder verzweigte Alkyl- oder Alkoxygruppe mit jeweils bis zu 6 Kohlenstoffatomen,
R^{15} und R^{16} sind gleich oder verschieden und stellen Wasserstoff, eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen, einen Phenyl- oder Benzylrest dar,
oder
R^{15} bedeutet Wasserstoff, und
R^{16} bedeutet eine Hydroxylgruppe,
oder
R^{15} und R^{16} bilden zusammen mit dem Stickstoffatom einen Pyrrolidi-nyl-, Morpholinyl- oder einen Piperidinylring,
R^{21} stellt Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 6 Kohlenstoffatomen dar,
und

R^4 stellt einen Phenylrest dar, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus Hydroxyl, Adamantyl, Phenoxy, Cyclopropyl, Cyclopentyl, Cyclohexyl, Fluor, Chlor, Brom, Jod, einer Nitro-, Tetrazolyl-, Furanyl-, Thienyl-, Pyridyl-, Trifluormethyl-, Difluormethyl-, Cyano-, Carboxy-, einer geradkettigen oder verzweigten Alkyl-, Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 10 Kohlenstoffatomen in der Alkylgruppe oder
mit einem Phenylrest mono- bis trisubstituiert ist, der gegebenenfalls mit Fluor, Chlor, Brom, einer Nitro-, Formyl- oder einer geradkettigen oder verzweigten Alkoxy-, Acyl-, Ethoxycarbonyl- oder mit einer Alkylgruppe mit jeweils bis zu 4 Kohlenstoffatomen mono- bis trisubstituiert ist, die gegebenenfalls mit einer Hydroxylgruppe substituiert ist, oder
der Phenylrest ist mit einer Gruppe der Formeln $-NR^{28}R^{29}$, $-SR^{30}$, $-SO_2R^{31}$, $-O-SO_2R^{32}$
oder

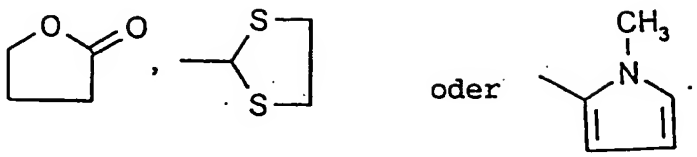


substituiert,
worin gilt:
R^{28} und R^{29} haben die oben für R^{10} und R^{11} angegebene Bedeutung,
oder
R^{28} bedeutet Wasserstoff,
und
R^{29} bedeutet eine geradkettige oder verzweigte Acylgruppe mit bis zu 6 Kohlenstoffatomen,
R^{30} bedeutet eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen,
R^{31} und R^{32} sind gleich oder verschieden und stellen eine geradkettige oder verzweigte Alkylgruppe mit bis zu 5 Kohlenstoffatomen oder einen Phenylrest dar, der gegebenenfalls mit einer Trifluormethylgruppe, Fluor, Chlor, Brom oder mit einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 3 Kohlenstoffatomen substituiert ist,
mit der Maßgabe, daß A keine Methylgruppe bedeutet,
oder

II.:

falls A eine Methylgruppe darstellt,
haben R^1, T und R^4 die in Teil I beschriebene Bedeutung und in diesem Fall gilt:
R^2 und R^3 sind gleich oder verschieden und stellen Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen oder
eine Formyl- oder geradkettige oder verzweigte Acyl- oder Alkoxycarbonylgruppe mit jeweils bis zu 4 Kohlenstoffatomen
oder eine Benzoylgruppe, die gegebenenfalls mit Substituenten aus den Reihen aus Fluor, Chlor, Brom, einer Cyano-, Carboxy-, einer geradkettigen oder verzweigten Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 4 Kohlenstoffatomen substituiert ist,
oder eine Gruppe der Formel $-SO_2-(NH)_g-R^{33}$, $-SO_2NH_2$, $-CO-(CH_2)_d-NR^{34}R^{35}$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ oder -CO-X dar,
worin gilt:
R^{33} hat die oben angegebene Bedeutung von R^9 und ist gleich damit oder verschieden davon,
R^{34} und R^{35} sind gleich oder verschieden und bedeuten Wasserstoff oder eine Methylgruppe,
R^{36} bedeutet eine Hydroxylgruppe oder eine geradkettige oder verzweigte Alkoxygruppe mit bis zu 4 Kohlenstoffatomen oder eine Carboxygruppe,
R^{37} hat die oben angegebene Bedeutung von R^{12} oder bedeutet eine Hydroxylgruppe oder eine geradkettige oder verzweigte Alkoxygruppe oder eine Oxacylgruppe mit jeweils bis zu 4 Kohlenstoffatomen,
d hat die oben angegebene Bedeutung von a,
e bedeutet die Zahl 1, 2, 3 oder 4,
f hat die oben angegebene Bedeutung von c,
g bedeutet die Zahl 0 oder 1,
X bedeutet Pyrrolyl, Furyl oder Isoxazolyl, welche gegebenenfalls mit einer Nitro-, Methyl- oder mit einer Ethylgruppe mono- bis trisubstituiert sind,

oder
X bedeutet einen Rest der Formeln:

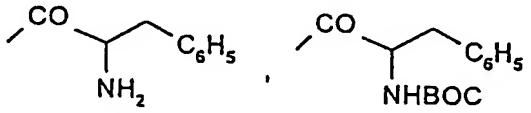


oder

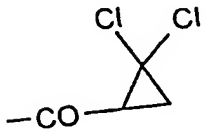
III.:
R^1, A und T haben die in Teil I beschriebene Bedeutung, oder
A stellt eine Methylgruppe dar,
R^2 und R^3 haben die oben angegebene Bedeutung, die in Teil II beschrieben ist,
und in diesem Fall gilt:
R^4 stellt Pyrridyl, Imidazolyl, Pyrazolyl, Thienyl, Isothiazolyl, 1,3-Thiazolyl oder Benzo[b]thiophenyl dar, worin alle Ringe gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einer Hydroxylgruppe, Fluor, Chlor, Brom, Jod, einer Nitro-, 1H-Tetrazolyl-, Trifluormethyl-, Trifluormethoxy-, Difluormethyl-, Difluormethoxy-, Cyano-, Carboxy-, einer geradkettigen oder verzweigten Alkyl-, Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 6 Kohlenstoffatomen oder mit einer Gruppe der Formeln - $NR^{38}R^{39}$, - SR^{40}, $-SO_2R^{41}$ oder $-O-SO_2R^{42}$ mono- bis trisubstituiert sind,
worin gilt:
R^{38} und R^{39} haben die oben für R^{28} und R^{29} angegebene Bedeutung und sind identisch damit oder verschieden davon,
R^{40} hat die oben angegebene Bedeutung von R^{30},
R^{41} und R^{42} sind gleich oder verschieden und haben die oben angegebene Bedeutung von R^{31} und R^{32},
und Salze davon.

3. Aminobenzofuryl- und -thienylderivate der Formel (I) gemäß Anspruch 1,
worin gilt:

I.:
R^1 stellt Wasserstoff, eine geradkettige oder verzweigte Alkylgruppe mit bis zu 3 Kohlenstoffatomen, Fluor, Chlor, Brom, einen Nitro- oder Trifluormethylgruppe dar,
R^2 stellt eine Formylgruppe oder eine geradkettige oder verzweigte Acylgruppe oder eine Alkoxycarbonylgruppe mit jeweils bis zu 5 Kohlenstoffatomen in der Alkylgruppe
oder eine Benzoylgruppe, die gegebenenfalls mit Substituenten aus den Reihen aus Fluor, Chlor, Brom, einer Cyano-, Carboxy-, einer geradkettigen oder verzweigten Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 3 Kohlenstoffatomen in der Alkylgruppe substituiert ist,
oder eine Gruppe der Formeln:



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$,
$-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ oder einen Rest der Formel



dar,
worin gilt:
R^9 bedeutet eine geradkettige oder verzweigte Alkylgruppe mit bis zu 4 Kohlenstoffatomen, die gegebenenfalls mit einem Phenylrest substituiert ist, oder
einen Phenylrest, der gegebenenfalls mit einer Trifluormethyl-, Cyano- oder einer geradkettigen oder verzweigten Alkylgruppe mit bis zu 3 Kohlenstoffatomen substituiert ist,
R^{10} und R^{11} sind gleich oder verschieden und bedeuten Wasserstoff, eine geradkettige oder verzweigte Alkylgruppe mit bis zu 3 Kohlenstoffatomen oder einen Phenylrest,
R^{12} bedeutet eine geradkettige oder verzweigte Alkoxycarbonylgruppe mit bis zu 3 Kohlenstoffatomen oder eine Carboxygruppe,
a bedeutet die Zahl 0, 1, 2 oder 3,
b bedeutet die Zahl 1, 2 oder 3,
R^{13} bedeutet eine geradkettige oder verzweigte Alkylgruppe mit bis zu 3 Kohlenstoffatomen,
R^3 stellt Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 3 Kohlenstoffatomen dar oder hat die oben angegebene Bedeutung von R^2,
T stellt ein Sauerstoff- oder Schwefelatom dar,
A stellt Wasserstoff, eine Hydroxyl-, Cyclopropyl-, Cyclobutyl-, Cyclopentyl-, Carboxyl- oder eine geradkettige oder verzweigte Alkoxycarbonyl- oder Alkoxygruppe mit jeweils bis zu 3 Kohlenstoffatomen oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 5 Kohlenstoffatomen dar, die gegebenenfalls mit einer Cyano- oder einer Gruppe der Formeln $-CO-R^{14}$, $-CO-NR^{15}R^{16}$ monosubstituiert ist, worin gilt:
R^{14} bedeutet eine Hydroxyl-, Cyclopropyloxy-, Cyclopentyloxy-, Cyclohexyloxy- oder eine geradkettige oder verzweigte Alkyl- oder Alkoxygruppe mit bis zu 5 Kohlenstoffatomen,
R^{15} und R^{16} sind gleich oder verschieden und bedeuten Wasserstoff, eine geradkettige oder verzweigte Alkylgruppe mit bis zu 3 Kohlenstoffatomen oder einen Phenylrest,
und
R^4 stellt einen Phenylrest dar, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einer Hydroxyl-, Adamantyl-, Phenoxy-, N-Methylpyrrolyl-, Cyclopropyl-, Cyclopentyl-, Cyclohexylgruppe, Fluor, Chlor, Brom, einer Furanyl-, Thienyl-, Pyridyl-, Nitro-, Trifluormethyl-, Difluormethyl-, Cyano-, Carboxyl-, Methylthio-, einer geradkettigen oder verzweigten Alkyl-, Alkoxy- Acyl- oder aus einer Alkoxycarbonylgruppe mit jeweils bis zu 9 Kohlenstoffaotmen
oder
mit einem Phenylrest mono- bis trisubstituiert ist, der gegebenenfalls mit Fluor, Chlor, Brom, einer Nitro-, Formyl- oder einer geradkettigen oder verzweigten Alkoxy-, Alkoxycarbonyl-, Acyl- oder mit einer Alkylgruppe mit bis zu 4 Kohlenstoffatomen mono- bis trisubstituiert ist, die gegebenenfalls mit einer Hydroxylgruppe substituiert ist,
mit der Maßgabe, daß A keine Methylgruppe bedeutet,
oder

II.:

falls A eine Methylgruppe darstellt,
haben R^1, T und R^4 die in Teil I beschriebene Bedeutung,
und in diesem Fall gilt:
R^2 und R^3 sind gleich oder verschieden und stellen Wasserstoff oder eine geradkettige oder verzweigte Alkylgruppe mit bis zu 3 Kohlenstoffatomen oder
eine Formylgruppe oder eine geradkettige oder verzweigte Acyl- oder Alkoxycarbonylgruppe mit jeweils bis zu 4 Kohlenstoffatomen
oder eine Benzoylgruppe, die gegebenenfalls mit Substituenten aus den Reihen aus Fluor, Chlor, Brom, einer Cyano-, geradkettigen oder verzweigten Alkoxy- oder Alkoxycarbonylgruppe mit jeweils bis zu 3 Kohlenstoffatomen substituiert ist,
oder eine Gruppe der Formeln $-CO-NH_2$, $-SO_2(NH)_gR^{37}$, $-SO_2NH_2$, $-(CH_2)_e-COR^{36}$, $-CO-(CH_2)_f-R^{37}$ oder -

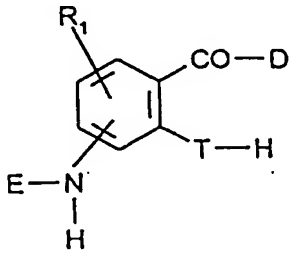
CO-X
dar,
worin gilt:
R^{33} hat die oben angegebene Bedeutung von R^9 und ist identisch damit oder verschieden davon,
R^{34} und R^{35} sind gleich oder verschieden und bedeuten Wasserstoff oder eine Methylgruppe,
R^{37} hat die oben angegebene Bedeutung von R^{12} oder bedeutet eine Hydroxylgruppe oder eine geradkettige oder verzweigte Alkoxy- oder eine Oxacylgruppe mit jeweils bis zu 4 Kohlenstoffatomen,
R^{36} bedeutet eine Hydroxylgruppe oder eine geradkettige oder verzweigte Alkoxygruppe mit bis zu 3 Kohlenstoffatomen,
e bedeutet die Zahl 1, 2, 3 oder 4,
f hat die oben angegebene Bedeutung von b,
g bedeutet die Zahl 0 oder 1,
X bedeutet Pyrrolyl, N-Methylpyrrolyl, Furyl oder Isoxazolyl, welche gegebenenfalls mit einer Nitro-, Methyl- oder einer Ethylgruppe mono- bis trisubstituiert sind,
oder
X bedeutet einen Rest der Formeln:

b bedeutet die Zahl 1 oder 2,
oder
III.:
R^1, A und T haben die oben angegebene Bedeutung, die in Teil I beschrieben ist,
oder
A stellt eine Methylgruppe dar,
wobei
R^2 und R^3 die in Teil II beschriebene Bedeutung haben, und in diesem Fall gilt:
R^4 stellt einen Pyridylrest dar, der gegebenenfalls mit gleichen oder verschiedenen Substituenten aus den Reihen aus einer Hydroxylgruppe, Fluor, Chlor, Brom, einer Nitro-, Trifluormethyl-, Trifluormethoxy-, Difluormethyl-, Difluormethoxy-, Cyano-, Carboxy-, einer geradkettigen oder verzweigten Alkyl-, Alkoxy-, Alkoxycarbonyl- oder aus einer Acylgruppe mit jeweils bis zu 5 Kohlenstoffatomen mono- bis trisubstituiert ist,
und Salze davon.

4. Aminobenzofuryl- und -thienylderivate gemäß einem der Ansprüche 1 bis 3 zur therapeutischen Verwendung.

5. Verfahren zur Herstellung der Aminobenzofuryl- und - thienyl-derivate gemäß einem der Ansprüche 1 bis 3, dadurch **gekennzeichnet**, daß

[A] Verbindungen der allgemeinen Formel (II):

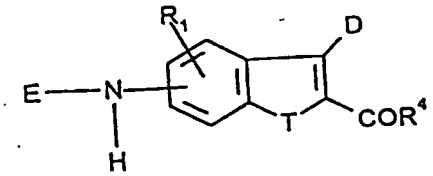


(II)

worin gilt:
R^1 und T haben die oben angegebene Bedeutung,
und
E bedeutet eine geradkettige oder verzweigte Acylgruppe mit bis zu 4 Kohlenstoffatomen, vorzugsweise eine Acetylgruppe,
und
D stellt eine -$(CH_2)_2$-(C_1-C_4)-Alkoxycarbonylgruppe dar,
durch Reaktion mit Verbindungen der Formel (III):

$$R^4\text{-}CO\text{-}CH_2\text{-}L \qquad (III)$$

worin gilt:
R^4 hat die oben angegebene Bedeutung,
und
L stellt eine Abgangsgruppe dar, wie Chlor, Brom, eine Tosylat- oder Mesylatgruppe,
in inerten Lösungsmitteln in der Gegenwart einer Base zuerst in Verbindungen der allgemeinen Formel (Ia) überführt werden:



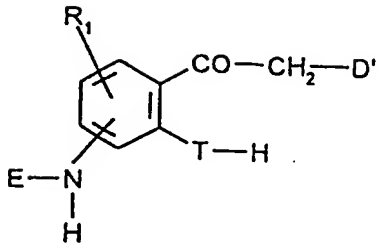
(Ia)

worin gilt:
R^1, T, D und E haben die oben angegebene Bedeutung,
und daß dann die Verbindungen (Ia)
mit Verbindungen der Formeln (IV) oder (IVa):

$$R^2\text{-}L' \qquad (IV)$$

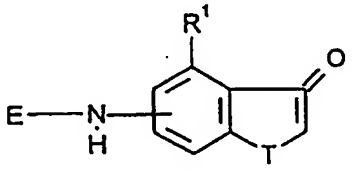
$$R^3\text{-}L' \qquad (IVa)$$

worin gilt:
R^2 und R^3 haben die oben angegebene Bedeutung,
und
L' hat die oben angegebene Bedeutung von L und ist identisch damit oder verschieden davon,
in inerten Lösungsmitteln, gegebenenfalls in der Gegenwart einer Base, umgesetzt werden, und daß im Falle weiterer Reste, die für die Bedeutung von Substituent A angegeben sind,
D abgeändert wird, gegebenenfalls durch Abspaltung von Schutzgruppen, Alkylierung und/oder Hydrolyse, oder daß
[B] im Fall von A = -CH_2-CO-R^{14}
zuerst Verbindungen der allgemeinen Formel (IIa):



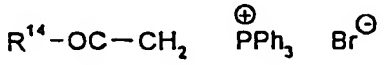
(IIa)

worin gilt:
E, T und R^1 haben die oben angegebene Bedeutung,
und
D' bedeutet Halogen, vorzugsweise Chlor,
in der Gegenwart von NaAc und einem Alkohol, vorzugsweise von Ethanol, in Verbindungen der allgemeinen Formel (V) überführt werden:



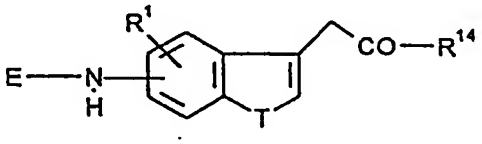
(V)

worin gilt:
R^1, E und T haben die oben angegebene Bedeutung,
welche dann mit Verbindungen der allgemeinen Formel (VI):



(VI)

worin
R^{14} die oben angegebene Bedeutung hat,
zu Verbindungen der allgemeinen Formel (VII):



(VII)

worin
E, R^1, T und R^{14} die oben angegebene Bedeutung haben,
in inerten Lösungsmitteln umgesetzt werden,
welche in einer letzten Stufe mit Verbindungen der allgemeinen Formel (VIII):

$$R^4\text{-CO-L'} \qquad \text{(VIII)}$$

worin

R^4 und L' die oben angegebene Bedeutung haben,
in der Gegenwart von $SnCl_4$ zur Reaktion gebracht werden, und daß
gegebenenfalls des weiteren eine Reaktion mit Verbindungen der allgemeinen Formeln (IV) oder (IVa) durchgeführt wird.

6. Zusammensetzung aus mindestens einem der Aminobenzofuryl- oder -thienylderivate gemäß einem der Ansprüche 1 bis 3 und aus einem pharmakologisch geeigneten Verdünnungsmittel.

7. Zusammensetzung gemäß Anspruch 6 zur Behandlung akuter und chronischer Entzündungen.

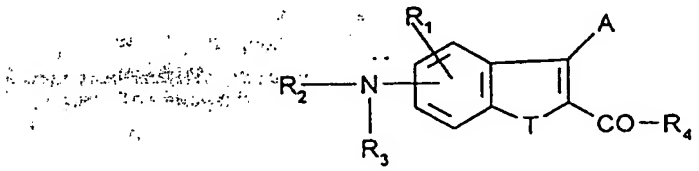
8. Verfahren zur Herstellung von Zusammensetzungen gemäß Anspruch 6 oder 7,
dadurch **gekennzeichnet**, daß
die Aminobenzofuryl- oder -thienylderivate und das pharmakologisch geeignete Verdünnungsmittel in eine zur Verabreichung geeignete Zubereitung eingebracht werden.

9. Verwendung der Aminobenzofuryl- und -thienylderivate gemäß einem der Ansprüche 1 bis 3 zur Herstellung von Medikamenten.

10. Verwendung gemäß Anspruch 9 zur Herstellung von Medikamenten zur Behandlung akuter und chronischer Entzündungen.

Revendications

1. Dérivés d'amino-benzofuryle et -thiényle, de formule générale (I)



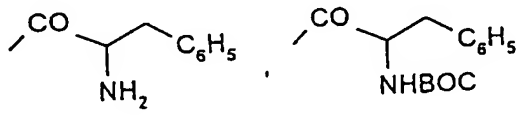
(I)

dans laquelle

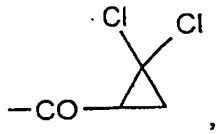
R^1 représente l'hydrogène ou un groupe alkyle à chaîne droite ou ramifie ayant jusqu'à 6 atomes de carbone ou représente un halogène, un groupe carboxyle, cyano, nitro, trifluorométhyle ou un groupe de formule -OR^5, -SR^6 ou -NR^7R^8,
dans laquelle
R^5, R^6 et R^8 sont identiques ou différents et représentent l'hydrogène, un groupe cycloalkyle ayant 3 à 6 atomes de carbone, un groupe benzyle ou hétérocycle penta- à heptagonal sature ou insaturé ayant jusqu'à 4 hétéroatomes choisis dans le groupe comprenant N, S et/ou O et auquel un noyau phényle peut être condensé et qui est facultativement substitué avec des substituants identiques ou différents faisant partie du groupe comprenant des substituants halogéno, cyano et nitro ou avec un substituant alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, ou représentent un groupe alkyle ou alcényle à chaîne droite ou ramifié ayant chacun jusqu'à 8 atomes de carbone, ou
représentent un groupe phényle, qui est facultativement monosubstitué à disubstitué avec des substituants identiques ou différents faisant partie du groupe comprenant des substituants nitro, halogéno, carboxy ou alkoxycarbonyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
ou
R^5 représente un groupe protecteur de la fonction hydroxyle, choisi entre les groupes triméthylsilyle, tertiobutyldiméthylsilyle, benzyle, 4-nitrobenzyle, 4-méthoxybenzyle, acétyle, tétrahydropyrannyle et benzoyle,
R^7 représente l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone,

R^2 représente un groupe formyle ou un groupe, à chaîne droite ou ramifié, acyle, alkoxy ou alkoxycarbonyle ayant chacun jusqu'à 8 atomes de carbone dans le groupe alkyle, ou représente un groupe benzoyle, qui est facultativement mono-substitué à trisubstitué avec des substituants identiques ou différents choisis dans

le groupe comprenant des substituants halogéno, cyano, carboxy, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié, ayant chacun jusqu'à 6 atomes de carbone dans le groupe alkyle, ou représente un groupe de formule



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ ou un résidu de formule



dans lequel

R^9 représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, qui est facultativement substitué avec un substituant phényle, ou représente un groupe phényle, qui est facultativement substitué avec un substituant trifluorométhyle, cyano, nitro ou alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,

R^{10} et R^{11} sont identiques ou différents et représentent l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone ou un groupe phényle,

R^{12} représente un groupe, à chaîne droite ou ramifié, hydroxyle, oxyacyle, alloxy ou alkoxycarbonyle ayant chacun jusqu'à 6 atomes de carbone ou un groupe carboxy,

a représente le nombre 0, 1, 2 ou 3,

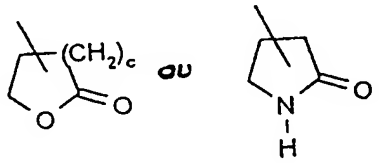
b représente le nombre 1, 2 ou 3,

R^{13} représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,

R^3 représente l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, ou bien répond à la définition précitée de R^2,

T représente un atome d'oxygène ou de soufre,

A représente l'hydrogène, un groupe hydroxyle, cycloalkyle ayant 3 à 6 atomes de carbone, carboxy ou alkoxycarbonyle ou alkoxy à chaîne droite ou ramifié ayant chacun jusqu'à 6 atomes de carbone, ou un groupe alkyle ou alcényle à chaîne droite ou ramifié ayant jusqu'à 8 atomes de carbone, chacun étant faculativement mono-substitué avec un substituant cyano ou avec un hétérocycle penta- à heptagonal saturé ou insaturé ayant jusqu'à 4 hétéroatomes du groupe comprenant N, S et O, qui est facultativement substitué avec des substituants identiques ou différents du groupe comprenant des substituants hydroxy, halogéno, cyano, nitro ou avec un substituant alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
ou les groupes alkyle ou alcényle sont facultativement substitués avec un groupe de formule

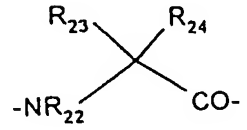


dans laquelle

c représente le nombre 1 ou 2,

et dans laquelle les deux noyaux sont facultativement monosubstitués avec un substituant hydroxy ou halogéno ou avec un substituant alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
ou les groupes alkyle ou alcényle sont facultativement monosubstitués avec un groupe de formule $-CO-R^{14}$,

$-CO-NR^{15}R^{16}$, $-CONR^{17}-SO_2-R^{18}$ ou $-PO(OR^{19})(OR^{20})$, $-OR^{21}$ ou



dans laquelle

R^{14} représente un groupe hydroxyle, cycloalkyloxy ayant 3 à 7 atomes de carbone ou un groupe alkyle ou alkoxy à chaîne droite ou ramifié ayant chacun jusqu'à 8 atomes de carbone,

R^{15}, R^{16} et R^{17} sont identiques ou différents et représentent l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, un groupe phényle ou benzyle,

ou

R^{15} représente l'hydrogène,

et

R^{16} représente un groupe hydroxyle,

ou

R^{15} et R^{16} conjointement avec l'atome d'azote, forment un hétérocycle penta- ou hexagonal saturé,

R^{18} représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, qui est facultativement substitué avec un substituant phényle ou trifluorométhyle,

ou

représente un groupe phényle, qui est facultativement substitué avec des substituants faisant partie du groupe comprenant des substituants halogéno, cyano et nitro ou avec un substituant alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,

R^{19}, R^{20} et R^{21} sont identiques ou différents et représentent l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,

R^{22} représente l'hydrogène, un groupe protecteur de la fonction amino ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,

R^{23} et R^{24} sont identiques ou différents et représentent l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone,

ou

R^{23} répond à la définition précitée,

et

R^{24} représente un groupe cycloalkyle ayant 3 à 6 atomes de carbone ou un groupe aryle ayant 6 à 10 atomes de carbone ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 8 atomes de carbone, qui est facultativement substitué avec un substituant cyano, méthylthio, hydroxy, mercapto, guanidyle ou un groupe de formule $-NR^{25}R^{26}$ ou $R^{27}-CO-$,

dans laquelle

R^{25} et R^{26} répondent à la définition mentionnée ci-dessus pour R^{15}, R^{16} et R^{17},

R^{27} représente un groupe hydroxyle, benzyloxycarbonyle, alkoxy à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone ou le groupe $-NR^{25}R^{26}$ précité,

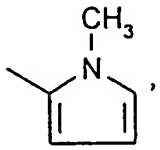
ou le groupe alkyle est facultativement substitué avec un substituant cycloalkyle ayant 3 à 6 atomes de carbone, ou avec un substituant aryle ayant 6 à 10 atomes de carbone, qui est facultativement substitué avec un substituant hydroxyle, halogéno, nitro, alkoxy à chaîne droite ou ramifié ayant jusqu'à 8 atomes de carbone ou avec le groupe précité, de formule - $NR^{25}R^{26}$,

ou le groupe alkyle est facultativement substitué avec un substituant indolyle ou avec un hétérocycle penta- ou hexagonal insaturé ayant jusqu'à 4 atomes de N dans lequel, facultativement, toutes les fonctions -NH sont protégées avec des groupes alkyle à chaîne droite ou ramifiés ayant jusqu'à 6 atomes de carbone ou avec un groupe protecteur de la fonction amino,

et

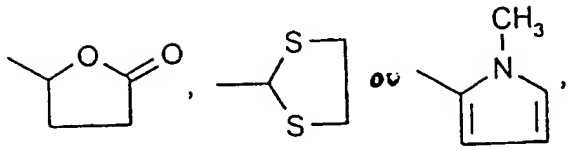
R^4 représente un groupe phényle, qui est facultativement monosubstitué à trisubstitué avec des substituants identiques ou différents faisant partie du groupe comprenant des substituants hydroxyle, adamantyle, phénoxy, cycloalkyle ayant 3 à 6 atomes de carbone, halogéno, nitro, furannyle, thiényle, pyridyle, tétrazolyle, trifluorométhyle, difluorométhyle, cyano, carboxyle, alkyle à chaîne droite ou ramifié, alkoxy, alkoxycarbonyle ou acyle ayant chacun jusqu'à 11 atomes de carbone dans le groupe alkyle ou avec un substituant phé-

nyle, qui est facultativement monosubstitué à trisubstitué avec des substituants nitro, halogéno, formyle, carbonyle ou alkoxy, acyle, alkoxycarbonyle ou alkyle à chaîne droite ou ramifié ayant chacun jusqu'à 6 atomes de carbone, qui est facultativement substitué avec un substituant hydroxyle,
ou le groupe phényle est substitué avec un groupe de formule $-NR^{28}R^{29}$, $-SR^{30}$, SO_2R^{31}, $-O-SO_2R^{32}$ ou



dans laquelle
R^{28} et R^{29} répondent aux définitions indiquées ci-dessus pour R^{10} et R^{11},
ou
R^{28} représente l'hydrogène,
et
R^{29} représente un groupe acyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
R^{30} représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
R^{31} et R^{32} sont identiques ou différents et représentent un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, un groupe benzyle ou phényle, qui est facultativement substitué avec un substituant trifluorométhyle, halogéno ou alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
sous réserve que A ne représente pas un groupe méthyle ou

II :
si A représente un groupe méthyle
R^1, T et R^4 répondent aux définitions indiquées dans la partie I,
et, dans ce cas,
R^2 et R^3 sont identiques ou différents et représentent l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, ou représentent un groupe formyle ou un groupe acyle, alkoxy ou alkoxycarbonyle à chaîne droite ou ramifié ayant chacun jusqu'à 8 atomes de carbone,
ou représentent un groupe benzoyle, qui est facultativement monosubstitué à trisubstitué avec des substituants identiques ou différents faisant partie du groupe comprenant des substituants halogéno, cyano, carboxy, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
ou représentent un groupe de formule
$-SO_2(NH)_gR^{33}$, SO_2NH_2, $-CO-(CH_2)_dNR^{34}R^{35}$,
$-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ ou -CO-X,
dans laquelle
R^{33} répond à la définition mentionnée ci-dessus pour R^9 et est identique à, ou différent de, ce dernier,
R^{34} et R^{35} sont identiques ou différents et répondent aux définitions précitées de R^{10} et R^{11},
R^{36} représente un groupe hydroxyle ou un groupe alkoxy à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
R^{37} répond à la définition précitée de R^{12} ou représente un groupe alkoxy ou oxyacyle à chaîne droite ou ramifié ayant chacun jusqu'à 6 atomes de carbone ou un groupe hydroxyle,
d répond à la définition précitée de a,
e représente le nombre 1, 2, 3, 4 ou 5,
f répond à la définition précitée de b,
g représente le nombre de 0 ou 1,
X représente un hétérocycle pentagonal saturé ou insaturé ayant jusqu'à 3 hétéroatomes du groupe comprenant N, S et/ou O, qui est facultativement monosubstitué à trisubstitué avec des substituants nitro, méthyle ou éthyle,
ou
X représente un résidu de formule



ou

III :

R^1, A et T répondent aux définitions indiquées dans la partie I, ou

A représente un groupe méthyle,

R^2 et R^3 répondent aux définitions mentionnées ci-dessus dans la partie II,

et, dans ce cas,

R^4 représente un hétérocycle penta- à heptagonal, saturé ou insaturé, qui peut contenir jusqu'à 3 atomes d'oxygène, de soufre et/ou d'azote comme hétéroatomes et auquel un noyau benzénique peut être en outre condensé, les deux noyaux étant facultativement monosubstitués à tri-substitués avec des substituants identiques ou différentes choisis dans le groupe comprenant de substituants hydroxyle, halogéno, nitro, 1H-tétrazolyle, trifluorométhyle, trifluorométhoxy, difluorométhyle, difluorométhoxy, cyano, carboxy, alkyle, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié ayant chacun jusqu'à 8 atomes de carbone, ou avec un groupe de formule $-NR^{38}R^{39}$, $-SR^{40}$, SO_2R^{41} ou $-O-SO_2R^{42}$, dans laquelle

R^{38} et R^{39} répondent aux définitions mentionnées ci-dessus pour R^{28} et R^{29} et sont identiques à ces derniers ou bien différents de ces derniers,

R^{40} répond à la définition précitée pour R^{30},

R^{41} et R^{42} sont identiques ou différents et répondent aux définitions précitées de R^{31} et R^{32},

et leurs sels.

2. Dérivés d'amino-benzofuryle et -thiényle, répondant à la formule suivant la revendication 1, dans laquelle

I. :

R^1 représente l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone ou représente le fluor, le chlore, le brome, un groupe nitro, trifluorométhyle ou un groupe de formule $-OR^5$, $-SR^6$ ou $-NR^7R^8$, dans laquelle

R^7 représente l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone,

R^5, R^6 et R^8 sont identiques ou différents et représentent l'hydrogène, un groupe cyclopropyle, cyclopentyle, cyclohexyle, quinolyle, pyridyle, imidazolyle, 1,3-thiazolyle ou thiényle, qui est facultativement substitué avec des substituants identiques ou différents choisis dans le groupe comprenant des substituants fluoro, chloro, bromo, iodo, cyano, nitro ou avec un substituant alkyle à chaîne droite ou ramifié ayant jusqu'à 5 atomes de carbone, ou

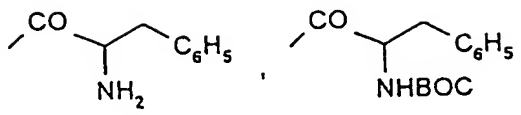
représentent des groupes alkyle ou alcényle à chaîne droite ou ramifiés ayant chacun jusqu'à 6 atomes de carbone, ou

représentent un groupe phényle, qui est facultativement monosubstitué à disubstitué avec des substituants identiques ou différents choisis dans le groupe comprenant des substituants nitro, fluoro, chloro, bromo, iodo, carboxy ou alkoxycarbonyle à chaîne droite ou ramifié ayant jusqu'à 5 atomes de carbone, ou

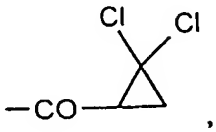
R^5 représente un groupe benzyle, acétyle ou tétrahydropyrannyle,

R^2 représente un groupe formyle ou un groupe acyle, alkoxy ou alkoxycarbonyle à chaîne droite ou ramifié ayant chacun jusqu'à 6 atomes de carbone dans le groupe alkyle,

ou représente un groupe benzoyle, qui est facultativement monosubstitué avec des substituants choisis dans le groupe comprenant des substituants fluoro, chloro, bromo, cyano, carboxy, alkoxy, alkoxycarbonyle ou acyle, à chaîne droite ou ramifié, ayant chacun jusqu'à 4 atomes de carbone dans le groupe alkyle, ou représente un groupe de formule



$-SO_2R^9$, $-CO-(CH_2)_a-NR^{10}R^{11}$, $-CO-(CH_2)_b-R^{12}$, $-CO-S-R^{13}$ ou un résidu de formule



dans lequel

R^9 représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone, qui est facultativement substitué avec un substituant phényle, ou

représente un groupe phényle, qui est facultativement substitué avec un substituant trifluorométhyle, cyano, nitro ou alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone,

R^{10} et R^{11} sont identiques ou différents et représentent l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone ou un groupe phényle,

R^{12} représente un groupe alkoxycarbonyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone ou un groupe carboxy,

a représente le nombre 0, 1, 2 ou 3,

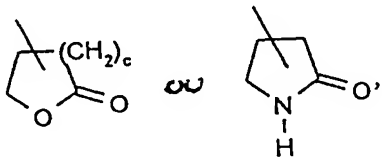
b représente le nombre 1, 2 ou 3,

R^{13} représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone,

R^3 représente l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone, ou répond à la définition précitée de R^2,

T représente un atome d'oxygène,

A représente l'hydrogène, un groupe hydroxyle, cyclopropyle, cyclobutyle, cyclopentyle, carboxyle ou un groupe alkoxycarbonyle ou alkoxy à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone, ou un groupe alkyle ou alcényle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone, chacun étant faculativement monosubstitué avec un substituant cyano, tétrazolyle, oxazolyle, oxazolinyle, thiazolyle ou un groupe de formule



dans laquelle

c représente le nombre 1 ou 2,

tous les noyaux étant facultativement mono-substitués avec un substituant hydroxy, fluoro, bromo, chloro ou avec un substituant alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone,

ou les groupes alkyle ou alcényle sont facultativement monosubstitués avec un groupe de formule $-CO-R^{14}$, $-CO-NR^{15}R^{16}$ ou $-OR^{21}$,

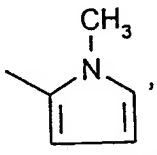
dans laquelle

R^{14} représente un groupe hydroxyle, cyclopropyloxy, cyclopentyloxy, cyclohexyloxy ou un groupe alkyle ou alkoxy à chaîne droite ou ramifié ayant chacun jusqu'à 6 atomes de carbone,

R^{15} et R^{16} sont identiques ou différents et représentent l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone, phényle ou benzyle,

ou
R^{15} représente l'hydrogène,
et
R^{16} représente un groupe hydroxyle,
ou
R^{15} et R^{16} conjointement avec l'atome d'azote, forment un noyau pyrrolidinyle, morpholinyle ou pipéridinyle,
R^{21} représente l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
et

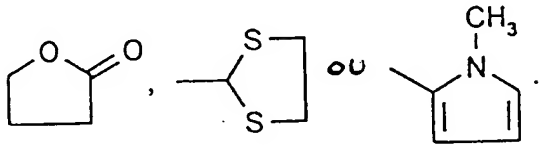
R^4 représente un groupe phényle, qui est facultativement monosubstitué à trisubstitué avec des substituants identiques ou différents choisis dans le groupe comprenant des substituants hydroxyle, adamantyle, phénoxy, cyclopropyle, cyclopentyle, cyclohexyle, fluoro, chloro, bromo, iodo, nitro, tétrazolyle, furannyle, thiényle, pyridyle, trifluorométhyle, difluorométhyle, cyano, carboxy, alkyle, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié ayant chacun jusqu'à 10 atomes de carbone dans le groupe alkyle, ou
avec un substituant phényle, qui est facultativement monosubstitué à trisubstitué avec des substituants fluoro, chloro, bromo, nitro, formyle ou alkoxy, acyle, éthoxycarbonyle ou alkyle à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone, qui est facultativement substitué avec un substituant hydroxyle, ou
le groupe phényle est substitué avec un groupe de formule $-NR^{28}R^{29}$, $-SR^{30}$, $-SO_2R^{31}$, $-O-SO_2R^{32}$ ou



dans laquelle
R^{28} et R^{29} répondent aux définitions mentionnées ci-dessus pour R^{10} et R^{11},
ou
R^{28} représente l'hydrogène,
et
R^{29} représente un groupe acyle à chaîne droite ou ramifié ayant jusqu'à 6 atomes de carbone,
R^{30} représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone,
R^{31} et R^{32} sont identiques ou différents et représentent un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 5 atomes de carbone ou un groupe phényle, qui est facultativement substitué avec un substituant trifluorométhyle, fluoro, chloro, bromo ou alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone,
sous réserve que A ne représente pas un groupe méthyle ou

II :
si A représente un groupe méthyle
R^1, T et R^4 répondent aux définitions mentionnées dans la partie I,
et, dans ce cas,
R^2 et R^3 sont identiques ou différents et représentent l'hydrogène ou des groupes alkyle à chaîne droite ou ramifiés ayant jusqu'à 4 atomes de carbone, ou
représentent un groupe formyle ou un groupe acyle ou alkoxycarbonyle à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone,
ou représentent un groupe benzoyle, qui est facultativement substitué avec des substituants choisis dans le groupe comprenant des substituants fluoro, chloro, bromo, cyano, carboxy, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone,
ou représentent un groupe de formule
$-SO_2(NH)_g-R^{33}$, SO_2NH_2, $-CO-(CH_2)_dNR^{34}R^{35}$,
$-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ ou -CO-X,
dans laquelle

R^{33} répond à la définition précitée de R^9 et est identique à, ou différent de, ce dernier,
R^{34} et R^{35} sont identiques ou différents et représentent l'hydrogène ou un groupe méthyle,
R^{36} représente un groupe hydroxyle ou un groupe alkoxy à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone, ou bien un groupe carboxy,
R^{37} répond à la définition précitée de R^{12} ou représente un groupe hydroxyle ou un groupe alkoxy ou oxacyle à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone,
d répond à la définition précitée de a,
e représente le nombre 1, 2, 3 ou 4,
f répond à la définition précitée de c,
g représente le nombre de 0 ou 1,
X représente un groupe pyrrolyle, furyle ou
isoxazolyle, qui est facultativement mono-substitué à trisubstitué avec des substituants nitro, méthyle ou éthyle ou X représente un résidu de formule



ou

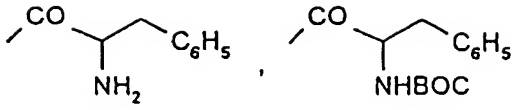
III :
R^1, A et T répondent aux définitions indiquées dans la partie I,
ou
A représente un groupe méthyle,
R^2 et R^3 répondent aux définitions mentionnées dans la partie II,
et, dans ce cas,
R^4 représente un groupe pyridyle, imidazolyle, pyrazolyle, thiényle, isothiazolyle, 1,3-thiazolyle ou benzo[b]thiophényle, dans lequel tous les noyaux sont facultativement monosubstitués à trisubstitués avec des substituants identiques ou différents faisant partie du groupe comprenant des substituants hydroxy, fluoro, chloro, bromo, iodo, nitro, 1H-tétrazolyle, trifluorométhyle, trifluorométhoxy, difluorométhyle, difluorométhoxy, cyano, carboxy, alkyle, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié ayant chacun jusqu'à 6 atomes de carbone, ou avec un groupe de formule $-NR^{38}R^{39}$, $-SR^{40}$, $-SO_2R^{41}$ ou $-O-SO_2R^{42}$,
dans laquelle
R^{38} et R^{39} répondent aux définitions mentionnées ci-dessus pour R^{28} et R^{29} et sont identiques à ces derniers ou bien différents de ces derniers,
R^{40} répond à la définition précitée de R^{30},
R^{41} et R^{42} sont identiques ou différents et répondent aux définitions précitées de R^{31} et R^{32},
et leurs sels.

3. Dérivés d'amino-benzofuryle et -thiényle, de la formule I suivant la revendication 1, dans laquelle

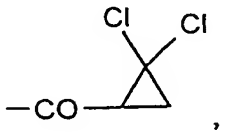
I. :

R^1 représente l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone, fluor, chlore, brome, nitro, trifluorométhyle,

R^2 représente un groupe formyle ou un groupe acyle ou alkoxycarbonyle à chaîne droite ou ramifié ayant jusqu'à 5 atomes de carbone dans le groupe alkyle,
ou représente un groupe benzoyle, qui est facultativement substitué avec des substituants faisant partie du groupe comprenant des substituants fluoro, chloro, bromo, cyano, carboxy, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié, chacun ayant jusqu'à 3 atomes de carbone dans le groupe alkyle,
ou représente un groupe de formule



$-SO_2R^9$, $-CO-(CH_2)_aNR^{10}R^{11}$, $-CO(CH_2)_b-R^{12}$, $-CO-S-R^{13}$
ou un résidu de formule



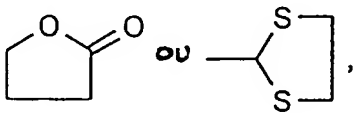
dans lequel
R^9 représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone, qui est facultativement substitué avec un substituant phényle, ou représente un groupe phényle, qui est facultativement substitué avec un substituant trifluorométhyle, cyano ou alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone,
R^{10} et R^{11} sont identiques ou différents et représentent l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone ou bien un groupe phényle,
R^{12} représente un groupe alkoxycarbonyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone ou un groupe carboxy,
a représente le nombre 0, 1, 2 ou 3,
b représente le nombre 1, 2 ou 3,
R^{13} représente un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone,

R^3 représente l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone, ou bien répond à la définition précitée de R^2,

T représente un atome d'oxygène ou de soufre,
A représente l'hydrogène, un groupe hydroxyle, cyclopropyle, cyclobutyle, cyclopentyle, carboxyle ou un groupe alkoxycarbonyle ou alkoxy à chaîne droite ou ramifié ayant chacun jusqu'à 3 atomes de carbone, ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 5 atomes de carbone qui est facultativement monosubstitué avec un substituant cyano ou avec un groupe de formule $-CO-R^{14}$, $-CO-NR^{15}R^{16}$,
dans laquelle
R^{14} représente un groupe hydroxyle, cyclopropyloxy, cyclopentyloxy, cyclohexyloxy ou un groupe alkyle ou alkoxy à chaîne droite ou ramifié ayant jusqu'à 5 atomes de carbone,
R^{15} et R^{16} sont identiques ou différents et représentent l'hydrogène, un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone ou un groupe phényle,
et

R^4 représente un groupe phényle, qui est facultativement monosubstitué à trisubstitué avec des substituants identiques ou différents faisant partie du groupe comprenant des substituants hydroxyle, adamantyle, phénoxy, N-méthylpyrrolyle, cyclopropyle, cyclopentyle, cyclohexyle, fluoro, chloro, bromo, furannyle, thiényle, pyridyle, nitro, trifluorométhyle, difluorométhyle, cyano, carboxyle, méthylthio, alkyle, alkoxy, acyle ou alkoxycarbonyle à chaîne droite ou ramifié ayant chacun jusqu'à 6 atomes de carbone, ou
avec un substituant phényle, qui est facultativement monosubstitué à trisubstitué avec des substituants fluoro, chloro, bromo, nitro, formyle ou alkoxy, alkoxycarbonyle, acyle ou alkyle à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone, qui est facultativement substitué avec un substituant hydroxyle,
sous réserve que A ne représente pas un groupe méthyle, ou

II. :
si A représente un groupe méthyle
R^1, T et R^4 répondent aux définitions mentionnées dans la partie I,
et, dans ce cas,
R^2 et R^3 sont identiques ou différents et représentent l'hydrogène ou un groupe alkyle à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone, ou représentent un groupe formyle ou un groupe acyle ou alkoxycarbonyle à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone,
ou représentent un groupe benzoyle, qui est facultativement substitué avec des substituants faisant partie du groupe comprenant des substituants fluoro, chloro, bromo, cyano, alkoxy ou alkoxycarbonyle à chaîne droite ou ramifié ayant chacun jusqu'à 3 atomes de carbone,
ou représentent un groupe de formule $-CO-NH_2$, $-SO_2(NH)_9R^{37}$, $-SO_2NH_2$, $-(CH_2)_e-CO-R^{36}$, $-CO-(CH_2)_f-R^{37}$ ou -CO-X,
dans laquelle
R^{33} répond à la définition précitée de R^9 et est identique à, ou différent de, ce dernier,
R^{34} et R^{35} sont identiques ou différents et représentent l'hydrogène ou un groupe méthyle, R^{37} répond à la définition précitée de R^{12} ou représente un groupe hydroxyle ou un groupe alkoxy ou oxacyle à chaîne droite ou ramifié ayant chacun jusqu'à 4 atomes de carbone,
R^{36} représente un groupe hydroxyle ou un groupe alkoxy à chaîne droite ou ramifié ayant jusqu'à 3 atomes de carbone,
d répond à la définition précitée de a,
e représente le nombre 1, 2, 3, ou 4,
f répond à la définition précitée de b,
g représente le nombre de 0 ou 1,
X représente un groupe pyrrolyle, n-méthylpyrrolyle, furyle ou isoxazolyle, qui est facultativement monosubstitué à trisubstitué avec des substituants nitro, méthyle ou éthyle,
ou
X représente un résidu de formule



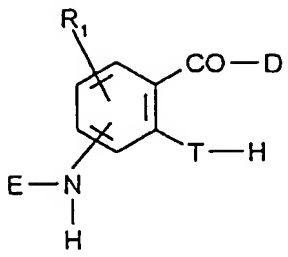
,

b représente le nombre 1 ou 2,
ou
III :
R^1, A et T répondent aux définitions indiquées dans la partie I,
ou
A représente un groupe méthyle,
R^2 et R^3 répondent aux définitions mentionnées dans la partie II,
et, dans ce cas,
R^4 représente un groupe pyridyle, qui est facultativement monosubstitué à trisubstitué avec des substituants identiques ou différents faisant partie du groupe comprenant des substituants hydroxyle, fluoro, chloro, bromo, nitro, trifluorométhyle, trifluorométhoxy, difluorométhyle, difluorométhoxy, cyano, carboxy, alkyle, alkoxy, alkoxycarbonyle ou acyle à chaîne droite ou ramifié ayant chacun jusqu'à 5 atomes de carbone,
et leurs sels.

4. Dérivés d'amino-benzofuryle et -thiényle suivant les revendications 1 à 3, destinés à être utilisés en thérapeutique.

5. Procédé pour la préparation de dérivés d'amino-benzofuryle et -thiényle suivant les revendications 1 à 3, caractérisé en ce que

[A] des composés de formule générale (II)

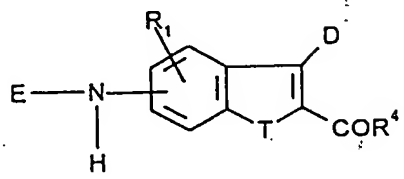


(II)

dans laquelle
R^1 et T répondent aux définitions précitées,
et
E représente un groupe acyle à chaîne droite ou ramifié ayant jusqu'à 4 atomes de carbone, de préférence un groupe acétyle,
et
D représente un groupe -$(CH_2)_2$-(alkoxy en C_1 à C_4)carbonyle,
par réaction avec des composés de formule (III)

$$R_4—CO—CH_2—L \qquad (III)$$

dans laquelle
R^4 répond à la définition précitée,
et
L représente un groupe partant tel qu'un groupe chloro, bromo, tosylate ou mésylate,
dans des solvants inertes en présence d'une base, sont tout d'abord transformés en composés de formule générale (Ia)



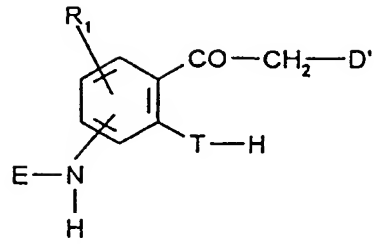
(Ia)

dans laquelle
R^1, T, D et E répondent aux définitions précitées, puis les composés (Ia)
sont amenés à réagir avec des composés de formule (IV) ou (IVa)

$$R^2\text{-}L' \qquad (IV)$$

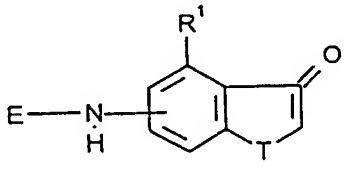
$$R^3\text{-}L' \qquad (IVc)$$

dans laquelle
R^2 et R^3 répondent aux définitions précitées,
et
L' répond à la définition précitée de L et est identique à, ou différent de, ce dernier,
dans des solvants inertes, si cela est approprié, en présence d'une base,
et, dans le cas d'autres radicaux mentionnés pour la définition du substituant A, D est modifié, si cela est approprié, par scission des groupes protecteurs, alkylation et/ou hydrolyse, ou
[B] dans le cas de A = CH_2-CO-R^{14}
tout d'abord des composés de formule générale (IIa)



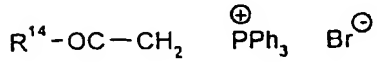
(IIa)

dans laquelle
E, T et R^1 répondent aux définitions précitées,
et
D' représente un halogène, de préférence le chlore, sont transformés en présence de NaAc et d'un alcool, de préférence l'éthanol, en composés de formule générale (V)



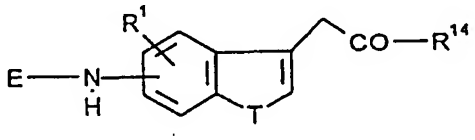
(V)

dans laquelle
R^1, E et T répondent aux définitions précitées,
puis sont amenés à réagir avec des composés de formule générale (VI)



(VI)

dans laquelle
R^{14} répond à la définition précitée,
ce qui donne des composés de formule générale (VII)



(VII)

dans laquelle
E, R^1, T et R^{14} répondent aux définitions précitées, dans des solvants inertes,
et, dans une dernière étape, ces composés sont amenés à réagir avec des composés de formule générale (VIII)

$$R^4\text{-CO-L'} \qquad \text{(VIII)}$$

dans laquelle
R^4 et L' répondent aux définitions précitées,
en présence de $SnCl_4$,
et

facultativement, les composés obtenus sont amenés à réagir avec des composés de formule générale (IV) ou (IVa).

6. Composition consistant en au moins un des dérivés d'amino-benzofuryle et -thiényle suivant les revendications 1 à 3 et un diluant pharmacologiquement acceptable.

7. Composition suivant la revendication 6, destinée au traitement de processus inflammatoires aigus et chroniques.

8. Procédé pour la préparation de compositions suivant les revendications 6 et 7, caractérisé en ce que le dérivé d'amino-benzofuryle ou -thiényle et le diluant pharmacologiquement acceptable soient incorporés à une formulation apte à l'administration.

9. Utilisation de dérivés d'amino-benzofuryle et -thiényle suivant les revendications 1 à 3, pour la préparation de médicaments.

10. Utilisation suivant la revendication 9, pour la préparation de médicaments destinés au traitement de processus inflammatoires aigus et chroniques.